SCS ENGINEERS

Results of Additional Subsurface Investigation

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California (SCDHS ID #00002017; NCRWQCB Site #1TSO501) (Assessor's Parcel No. 134-171-053)

File Number 01203312.00

Prepared by:

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To:

Mr. Cliff Ives Sonoma County Department of Health Services 475 Aviation Blvd., Suite 220 Santa Rosa, California 95403

May 6, 2005

LIMITATIONS/DISCLAIMER

This report has been prepared for Ghilotti Construction Company with specific application to additional subsurface exploration for the property located at 246 Ghilotti Avenue, Santa Rosa, California. This report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. The conclusions contained herein are based on analytical data, and points of exploration. The nature and extent of subsurface conditions may and likely do vary between borings and/or points of exploration. No other warranty, either expressed or implied, is made as to the professional conclusions presented herein.

Access to the property and the surrounding area was limited by buildings, roadways, underground and above-ground utilities and other miscellaneous site and site vicinity features. Therefore, the field exploration and points of subsurface observation were somewhat restricted.

Changes in site use and conditions may occur due to man-made changes or variations in rainfall, temperature, water usage, or other factors. Additional information which was not available to the consultant at the time of this assessment or changes which may occur on the site or in the surrounding area may result in modification to the site and the vicinity that would impact the summary presented herein. This report is not a legal opinion.

We trust this report provides the information you require at this time and we appreciate the opportunity to work with you on this project. If you require any additional information, or have any questions, please do not hesitate to contact SCS at (707) 546-9461.

Kevin L. Coker REA 7887

CA registration fees paid through 06/30/05

Stephen Knuttel PG 7674

CA registration fees paid through 07/31/05

5-6-05

KNUTTEL

Date

Date

Introduction

SCS Engineers (SCS) is pleased to present the results of additional subsurface investigation performed at Ghilotti Construction Company, 246 Ghilotti Avenue, Santa Rosa, California. This work was performed in accordance with a Work Plan (PNEG, 2002b) which was subsequently approved by the Sonoma County Department of Health Services (SCDHS, 2002). Extensive delays were encountered due to issues surrounding approval of the access agreement for the work proposed in Ghilotti Avenue. The site is located as shown on the Site Location Map, Figure 1. General site features are shown on the Site Plan, Figure 2.

Background

On March 19, 1992, Trans Tech Consultants (TTC) supervised Petroleum Engineering's removal of three underground storage tanks (USTs) from the site, consisting of one 2,000-gallon gasoline UST, one 8,000-gallon diesel fuel UST, and one 7,500-gallon diesel fuel UST (Ghilotti, 1995). Hydrocarbon odor emanated from the excavation, some sand on the bedding was stained, and a film of hydrocarbon product was observed on water in the excavation. Six sidewall soil samples, a soil sample from under each UST, a sample of soil from an excavation stockpile, and one water sample were obtained from the excavation. The approximate excavation limits are shown on Figure 2. Analytical results from the excavation pit sampling indicated an impact by petroleum-related hydrocarbons (Ghilotti, 1995).

On October 1, 1992, Ghilotti Construction Company (Ghilotti) extended and widened the north end of the tank excavation and removed soil below a concrete slab located between the UST excavation and the former fuel island. The excavation was extended to about fourteen feet below existing ground surface (bgs), was widened laterally two feet to the west, four feet to the north, and approximately fifteen feet to the east (Figure 2). The soil beneath the concrete slab was removed to depths of between approximately four feet and seven feet bgs (Ghilotti, 1995). TTC observed the removal of the additional impacted soils, the collection of soil samples for classification, and the field screening of soil using an organic vapor analyzer. On October 6, 1992, Ghilotti laterally extended the southeast portion of the excavation to remove additional impacted soil. TTC returned to the site on October 7, 1992 to collect excavation bottom samples. On October 13, 1992, Ghilotti deepened the eastern side of the excavation to depths between 11 and 14 feet bgs, in order to remove impacted soil detected in previously collected soil samples. Additional soil samples were collected from the bottom of the excavation. Laboratory analysis of soil samples collected from the final excavation limits indicated that concentrations of total petroleum hydrocarbons (TPH) as gasoline (g), as diesel (d), and benzene, toluene, ethyl benzene, and xylenes (BTEX) were non-detect (ND). The soil analytical results from the excavation activities are presented in Tables 1 and 2.

Three borings (B-1, B-2, and B-3) were drilled, sampled, and subsequently converted into monitoring wells MW-1, MW-2, and MW-3, respectively in November 1992 (Ghilotti, 1995). Soil analytical results are presented in Table 3.

Sensitive Receptor Survey

A Sensitive Receptor Survey (SRS) was conducted for the site in September 1996 (PNEG, 1996). The subject site has a water supply well located approximately 400 feet east of the former UST locations (Figure 5). The on-site water supply well has been on a quarterly sampling program since 1998 and has been ND for all target analytes since April 2002 (Table 6). The Syar Asphalt site to the south of the Ghlotti property also has a water supply well located near the railroad tracks (Figure 5). Numerous residences to the north/northwest were noted to have water supply wells. Recent information obtained from an on-going investigation of the Royal Petroleum facility northwest of the site (365 Todd Road) reveals that many of the water supply wells in the vicinity have been connected to the City of Santa Rosa Water Utility system because of a fuel release from the Royal Petroleum facility located at 365 Todd Road. No sensitive receptors, other than the on-site water supply well, were noted within 500 feet of the former UST locations.

Site Geology/Hydrogeology

The results of the January 2005 drilling program indicated a lithology generally consisting of sandy clay to sandy silt with gravel underlain by silty to sandy clays with gravel to the maximum depth explored of 21.5 feet bgs by hollow stem augers. Results from the one Cone Penetrometer Test (CPT) sounding on the site revealed silts and clays with minor sand layers to a depth of approximately 85 feet bgs. Free groundwater was encountered at depths ranging from approximately 9.5 to 11.5 feet bgs. Boring logs are presented in Appendix A.

Depth to groundwater has fluctuated seasonally during this investigation from approximately 3.5 feet bgs to 15.5 feet bgs. The groundwater flow direction on the site varies throughout the year, but has been generally to the southwest at gradients ranging from 0.03 to 0.002 (Table 5).

Monitoring Well Installation - 2005

Seven additional monitoring wells (MW-04 through MW-10) were drilled, sampled and installed at the approximate locations shown on Figure 2 on February 1, 2, and 3, 2005. The borings for the monitoring wells were drilled using 8-inch diameter hollow stem augers and were converted into monitoring wells using 2-inch diameter Schedule 40 flush threaded PVC material. The screened interval in the monitoring wells consists of 0.020 inch machine slotted screen which extends from approximately 5 to 20 feet bgs. The depth of each boring is approximately 20.5-21.5 feet, with 15 feet of screen in each well. A #2/12 sand was used to create a filter pack around the screen. The filter pack was brought approximately 1 to 1.5 feet above the top of the screen, an approximate 2 foot bentonite seal was placed on top of the sand filter pack, and the wells were completed to the surface with a cement seal. Additional well completion details are presented in Appendix B.

The PVC well casing in each monitoring well extends to within 6 inches bgs and the casing is fitted with a waterproof locking cap. The wells are protected by traffic-rated, water-tight circular vaults.

Based on the results of the previous drilling programs, soil samples were collected and examined for lithology from each of the borings beginning at an approximate depth of 5 feet bgs, and every 5 feet thereafter to a maximum depth of approximately 21 feet bgs. Three to four soil samples from each of the borings were submitted for analysis. The ends of the sample tubes selected for analysis were covered with Teflon® Tape and sealed with plastic caps. Soil samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody documentation to AS for analysis. AS is a California Department of Health Services certified laboratory for the analysis requested. Copies of AS' current certifications have been reviewed and are on file. The soil samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol.

The augers used for drilling were pressure washed, and the small sampling equipment was washed in a detergent solution and rinsed to prevent cross contamination between borings. The drill cuttings were placed on and covered with plastic sheeting, pending disposal. The water generated by decontamination, well development, and sampling is stored at the site in steel 55-gallon UN/DOT-approved drums, pending disposal. Disposal of the soil and groundwater generated during the subsurface investigation activities is scheduled for disposal by Integrated Wastestream Management in the near future.

Laboratory Analysis - Soil

Soil samples collected from the monitoring well borings were analyzed for TPH-g using EPA Method 8015M, for TPH-d by EPA Method 3550/8015M, and for BTEX and MTBE by EPA Method 8020.

Well Development

The seven newly installed monitoring wells, MW-04 through MW-10, were swabbed to set the filter pack during well installation to the extent feasible. They were developed on February 2, 2005 using a surge block and a submersible field portable groundwater purging pump. Information obtained during well development was recorded on field sampling forms from which Well Development Records were generated, copies of which are presented in Appendix C.

Groundwater Monitoring

Depth to groundwater measurements were collected from each of the previously existing wells (MW-1 through MW-3) in addition to the newly installed wells (MW-04 through MW-10) on February 11, 2005. Depths to groundwater ranged from approximately 3.5 to 6 feet bgs. The depth-to-groundwater measurements were combined with the well casing elevations to determine the groundwater flow direction and gradient. Casing and groundwater elevations are reported in feet relative to mean sea level. Depths to groundwater are expressed in feet. For the 1st Quarter 2005

sampling event, the groundwater flow direction was interpolated to be southwesterly at a calculated gradient of 0.002 feet per foot (Figure 3, Table 5).

Groundwater Sampling

After the newly installed monitoring wells were developed, they were allowed to set for approximately 9 days prior to collecting depth to groundwater measurements. After depth to groundwater measurements were collected, MW-1 through MW-10 were checked for the presence of free product by subjective evidence and using an oil/water interface probe. No free product was reported during this monitoring event. The wells were then purged of approximately 3 wetted well casing volumes of groundwater, or at least 5 gallons, whichever was greater, using a submersible pump. Temperature, pH, conductivity, turbidity, and dissolved solids were measured during purging to help demonstrate that fresh groundwater was entering the well casing for sampling. Each well was allowed to recover prior to sampling. Groundwater samples were collected using a separate disposable bailer for each well, and were transferred into the appropriate containers supplied by the laboratory for analysis. The samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody to AS. All samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol. Information obtained during sampling was recorded on field sampling forms from which Well Purge Records were generated, copies of which are presented in Appendix C. The groundwater generated during the recent well sampling activities is stored at the site in 55-gallon UN/DOT-approved drums, pending disposal.

Well Survey

The tops of the new monitoring well casings were surveyed under the supervision of a California licensed land surveyor to 0.01 feet to determine their elevations relative to mean sea level on March 9, 2005. In addition, the latitude and longitude of the monitoring wells has been determined to within 1 meter. The surveyed monitoring well elevations and monitoring well locations will be submitted electronically to the State Department of Water Resources Geotracker database.

Cone Penetrometer Testing - 2005

PNEG¹ proposed to locate the second viable water-bearing zone beneath the site with the use of CPT equipment (PNEG, 2002b). The CPT rig mobilized to the site and conducted a lithology study at the approximate location indicated on Figure 2 on March 2, 2005. Water-bearing zones were identified at approximate depths of 38 and 82 feet bgs. Grab groundwater samples were collected at these depths. A copy of the laboratory report is presented in Appendix E. A copy of Precision Drilling & Sampling's CPT Report is presented in Appendix F.

¹ Pacific Northwest EnviroNet Group, Inc. (PNEG) became a part of SCS in July 2003.

Laboratory Analysis

The groundwater samples collected from the newly installed wells were analyzed for TPH-g by EPA Method 8015M, and for BTEX and the five ether-based oxygenates (MTBE, DIPE, ETBE, TAME, and TBA) by EPA Method 8260B. The groundwater samples collected from MW-1 through MW-3 were analyzed for the five ether-based oxygenates only. The grab groundwater samples collected from CPT-01 were analyzed for TPH-g by EPA Method 5030/8015M, for TPH-d by EPA Method 3510/8015M, and for BTEX and the five ether-based oxygenates by EPA Method 8260B.

Soil Analytical Results

The soil samples collected from MW-04 through MW-10 were below the laboratory RDL for all target analytes. Soil analytical results are presented in Table 4.

Groundwater Analytical Results

Four of the seven newly installed wells contained MTBE above the laboratory RDL. MTBE was detected at concentrations of 1.9 micrograms per liter (μ g/L) in MW-04, 6.9 μ g/L in MW-07, 3.2 μ g/L in MW-09, and 20 μ g/L in MW-10. MTBE was not detected above the laboratory RDL in MW-05, MW-06 and MW-08. The additional fuel oxygenates and TPH-g were not detected above the laboratory RDL in any of the monitoring well groundwater samples. Xylenes were detected in the sample collected from MW-04 at a concentration of 1.1 μ g/L; the BTEX constituents were below the laboratory RDL in all other samples. The sample collected at a depth of 38 feet bgs from the CPT sounding contained MTBE at a concentration of 2.8 μ g/L and the deeper sample collected at a depth of 82 feet bgs was below the laboratory report detection limit (RDL) for all target analytes.

Discussion

As indicated on Figure 4, the lateral extent of the MTBE groundwater impact has not been adequately assessed to the west/southwest of MW-10 and to the north of MW-07. The source of the MTBE ($2.8 \,\mu\text{g/L}$) detected in the CPT groundwater sample at 38 feet bgs is suspect at this time as it may have been caused by downward migration of groundwater from the upper water-bearing interval.

Recommendations

SCS recommends continued monitoring at the site to confirm the recent analytical results generated from the 7 newly installed wells MTBE and BTEX by 8260. Base on current and past results from the site, MTBE and possible trace concentrations of BTEX appear to be the only constituents of concern and it is therefore recommended that the samples from all the wells be monitored for only MTBE and BTEX by EPA Method 8260. Upon completion of one full hydrologic cycle of sampling

of the new wells, additional monitoring points to the west/southwest of MW-10 and to the north of MW-7 may be required in order to adequately assess the lateral extent of the MTBE impacted groundwater or a request for site closure will be presented.

Attachments File No. 01203312.00

Figure 1: Site Location Map

Figure 2: Site Plan

Figure 3: Site Plan - Groundwater Flow Direction and Gradient for 02/11/05

Figure 4: Isoconcentration Map - MTBE in Groundwater for 02/11/05

Figure 5: Sensitive Receptors Map

Key to Diagram and Tables

Diagram A: MTBE & Groundwater Elevation vs Time

Table 1: Historical Soil Excavation, Stockpile and Groundwater Analytical Results

Table 2: Historical Excavation Soil Sample Results

Table 3: Soil Sample Results - Borings B-1 through B-3 (MW-1 through MW-3)

Table 4: Soil Analytical Results – Monitoring Wells - 2005

Table 5: Groundwater Flow Direction and Gradient – 1996 to present

Table 6: Domestic Well Analytical Results

Table 7: Groundwater Analytical Results – Monitoring Wells

Table 8: CPT Groundwater Analytical Results

Appendices File 01203312.00

Appendix A

Unified Soil Classification System Chart and Boring Log Legend

Boring Logs for MW-04 through MW-10

DWR 188 Forms for MW-04 through MW-10

Appendix B

Well Completion Diagrams for MW-04 through MW-10

Appendix C

Well Development Records, dated February 2, 2005

Well Purge Records, dated February 11, 2005

Appendix D

Well Survey Report, dated March 10, 2005

Appendix E

Analytical Sciences Report #5020206, dated February 11, 2005

Analytical Sciences Report #5020207, dated February 11, 2005

Analytical Sciences Report #5020317, dated February 16, 2005

Analytical Sciences Report #5021401, dated February 23, 2005

Analytical Sciences Report #5030308, dated March 18, 2005

Appendix F

Precision Drilling & Sampling CPT Report

Reference List File No. 01203312.00

- Ghilotti, 1995. Personal communication between D. Ghilotti and L. Mackey-Taverner, June 26.
- PNEG, 1996. Monitoring Report, Sensitive Site Receptor Survey, and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, California, October 15.
- PNEG, 1997a. Monitoring Report and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, February 5.
- PNEG, 1997b. September 1997 Semiannual Groundwater Monitoring Report and Request for Site Closure, 246 Ghilotti Avenue, Santa Rosa, October 17.
- PNEG, 1998a. Semiannual Groundwater Monitoring Report for June 1998 Sampling, 246 Ghilotti Avenue, Santa Rosa, August 1998.
- PNEG, 1999a. Status Report for 246 Ghilotti Avenue, Santa Rosa, December 14.
- PNEG, 1999b. Results of the December 1999 Quarterly Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, February 28.
- PNEG, 2000a. Results of the March 2000 Quarterly Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, May 31.
- PNEG, 2000b. Results of the 2nd Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, August 7.
- PNEG, 2000c. Results of the 3rd Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, December 11.
- PNEG, 2001a. Results of the 4th Quarter 2000 Monitoring Event and Domestic Well Sampling at 246 Ghilotti Avenue, Santa Rosa, February 23.
- PNEG, 2001b. Results of the 2nd Quarter 2001 Groundwater Monitoring and Sampling and Domestic Well Sampling Event at 246 Ghilotti Avenue, Santa Rosa, June 6.
- PNEG, 2001c. Results of the 3rd Quarter 2001 Groundwater Monitoring and Sampling and Domestic Well Sampling Event at 246 Ghilotti Avenue, Santa Rosa, September 7.
- PNEG, 2001d. Results of the 4th Quarter 2001 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, November 30.
- PNEG, 2002a. Results of the 1st Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, March 20.
- PNEG, 2002b. Work Plan to Define the Lateral and Vertical Extent of MTBE Contamination- 246 Ghilotti Avenue, Santa Rosa, California, May 28.
- PNEG, 2002c. Results of the 2nd Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, June 6.
- PNEG, 2002d. Results of the 3rd Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, August 14.
- PNEG, 2002e. Results of the 4th Quarter 2002 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, November 13.
- PNEG, 2003a. Results of the 1st Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, March 17.

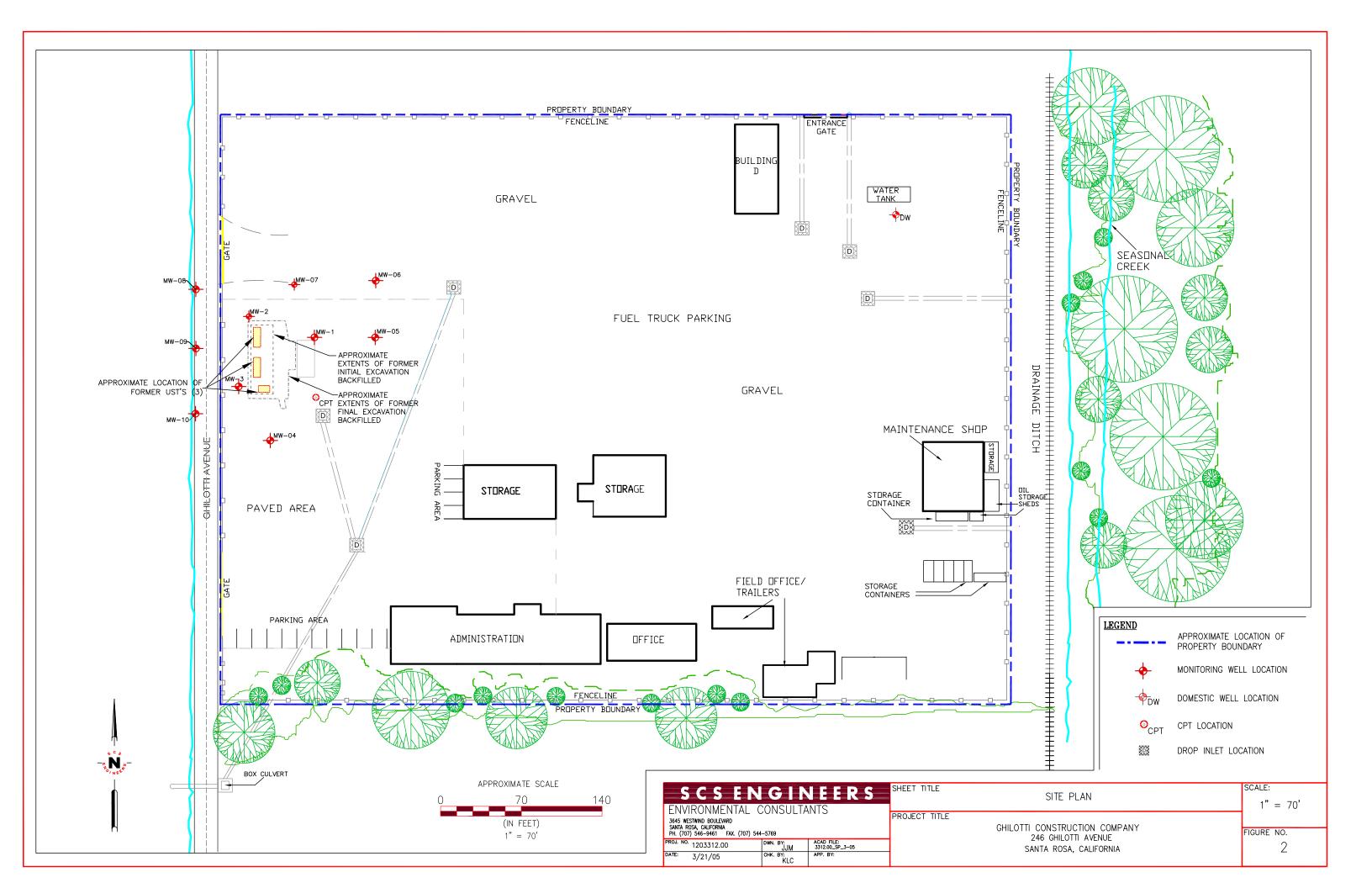
- PNEG, 2003b. Results of the 2nd Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, May 8.
- SCDHS, 2002. Work Plan approval from C. Ives, dated June 24.
- SCS, 2003a. Results of the 3rd Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, August 13.
- SCS, 2003b. Results of the 4th Quarter 2003 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, November 20.
- SCS, 2004a. Results of the 1st Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, January 29.
- SCS, 2004b. Results of the 2nd Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, May 7.
- SCS, 2004c. Results of the 3rd Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, August 9.
- SCS, 2004d. Results of the 4th Quarter 2004 Groundwater Monitoring and Sampling Event at 246 Ghilotti Avenue, Santa Rosa, California, December 29.

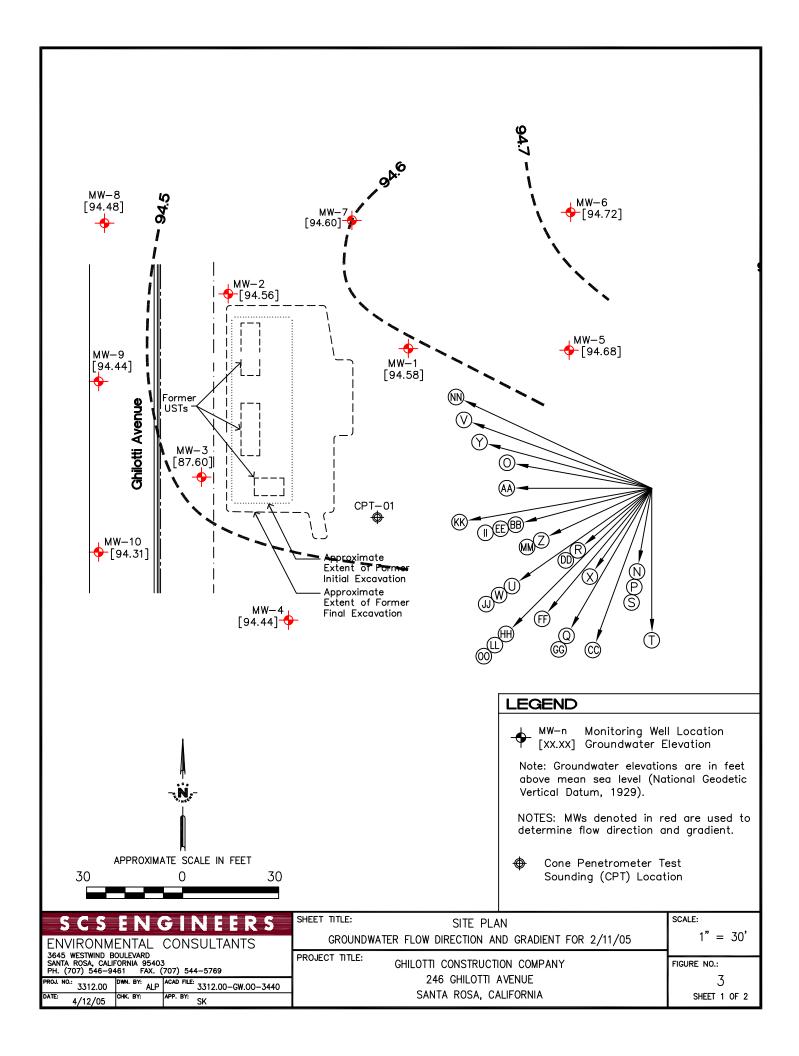
Distribution List File No. 01203312.00

Mr. Damon Calegari Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California 95403

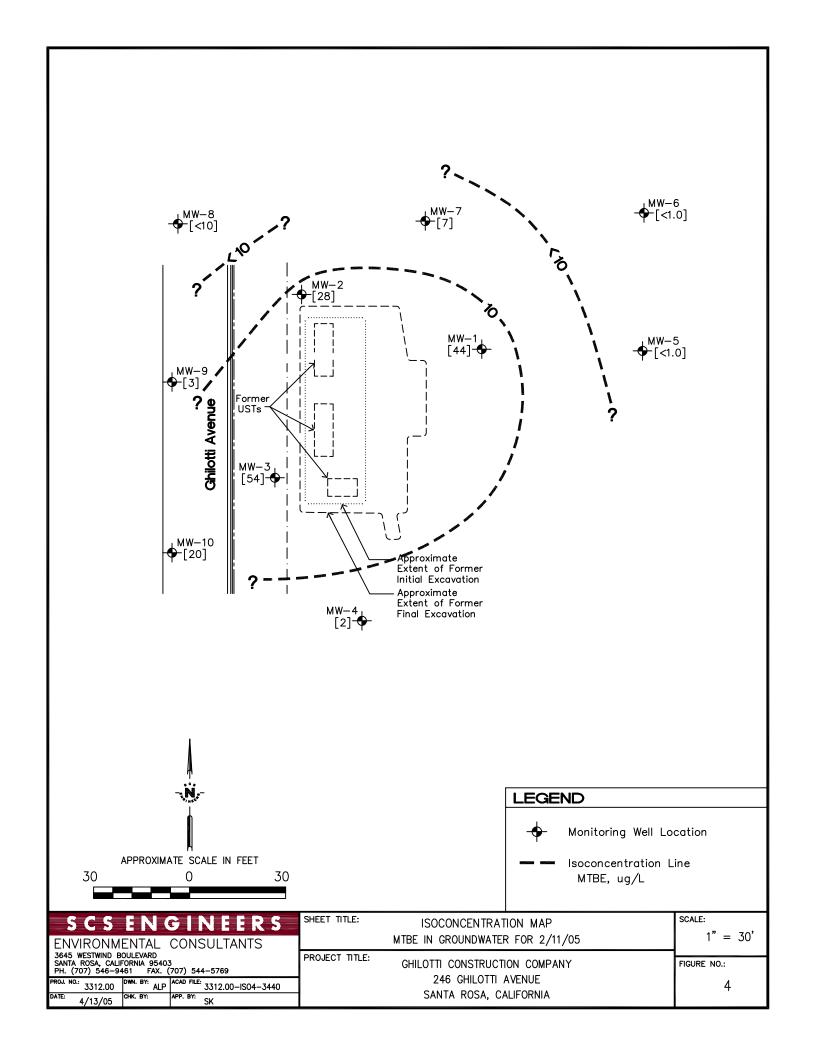
Ms. Beth Lamb North Coast Regional Water Quality Control Board 5550 Skylane Boulevard, Suite A Santa Rosa, California 95403

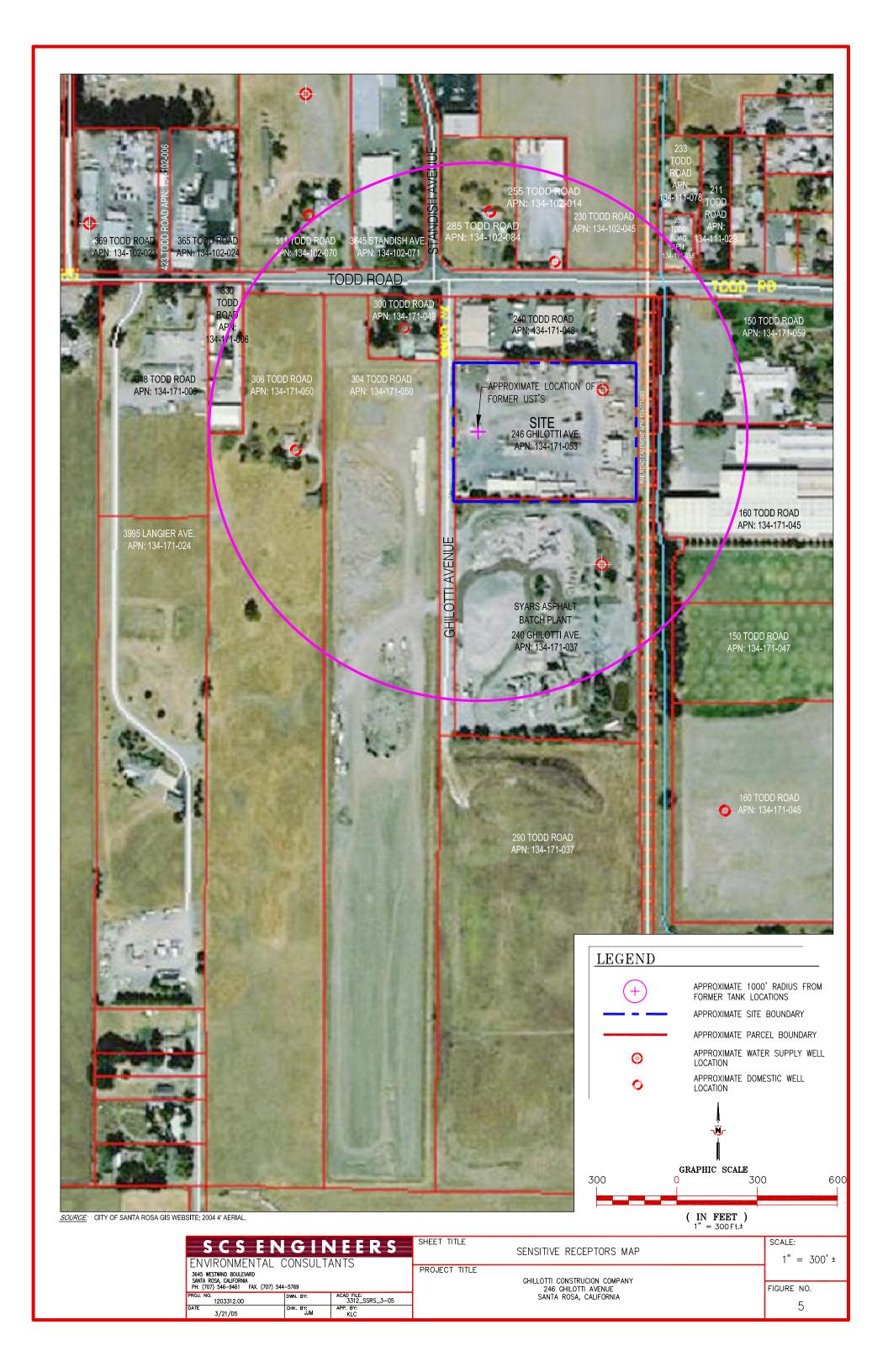






| | (| GROUNE | OWATER | FLOW I | LEGEND | • | |
|--|----------------------------------|------------------------|-------------------|---|------------------|------------------------|----------------------------------|
| | Groundwater | | t Contour | ldentifier Tag | Date | Est. Flow Direction | Gradient Slope |
| Flow Direct | tion ► | (Intervo | ıl = 0.1 ft) | | 4/6/04 | S45°W | i = 0.002 |
| ldentifier Tag | Date | Est. Flow Direction | Gradient Slope | (MM) | 7/7/04 | S65°W | i = 0.003 |
| N | 6/24/96 | S10°W | i = 0.005 | (NN) | 11/11/04 | N60°W | i = 0.003 |
| 0 | 12/20/96 | N80°W | i = 0.003 | 00 | 2/11/05 | SW | i = 0.002 |
| P | 4/18/97 | S10°W | i = 0.005 | | | | |
| Q | 9/11/97 | S30°W | i = 0.006 | | | | |
| R | 6/19/98 | S48°W | i = 0.002 | | | | |
| S | 3/3/99 | S10°W | i = 0.002 | | | | |
| T | 6/2/99 | Due South | i = 0.008 | | | | |
| Ü | 12/28/99 | S55°W | i = 0.003 | | | | |
| V | 3/23/00 | N68°W | i = 0.03 | | | | |
| W | 6/20/00 | S55°W | i = 0.003 | | | | |
| \otimes | 10/3/00 | S35°W | i = 0.005 | | | | |
| Ŷ | 1/9/01 | N75°W | i = 0.002 | | | | |
| Z | 4/10/01 | S65°W | i = 0.003 | | | | |
| AA | 7/11/01 | West | i = 0.003 | | | | |
| BB | 10/10/01 | S75°W | i = 0.004 | | | | |
| CC | 1/9/02 | S20°W | i = 0.003 | | | | |
| (DD) | 4/5/02 | S50°W | i = 0.002 | | | | |
| ŒĒ | 7/3/02 | S75°W | i = 0.004 | | | | |
| FF | 10/24/02 | S40°W | i = 0.005 | | | | |
| GG | 1/22/03 | S30°W | i = 0.002 | | | | |
| HH | 4/17/03 | S45°W | i = 0.002 | | | | |
| | 7/14/03 | S75°W | i = 0.003 | | | | |
| \bigcirc | 10/7/03 | S55°W | i = 0.004 | | | | |
| (KK) | 1/2/04 | S80°W | i = 0.002 | | | | |
| ENVIRONMEN | NGINE | ANTS | O IECT TITLE: | | AND GRADIENT FOR | R 2/11/05 | scale: 1" = 30' |
| SANTA ROSA, CALIFORN PH. (707) 546–9461 PROJ. NO.: 3312.00 | NIA 95403 FAX. (707) 544-5769 | | G | CHILOTTI CONSTRUC 246 GHILOTT SANTA ROSA, | I AVENUE | | FIGURE NO.: 3 SHEET 2 OF 2 |





Key to Diagram and Tables 246 Ghilotti Avenue, Santa Rosa

TPH-g = Total petroleum hydrocarbons in the gasoline range

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes

MTBE = Methyl tertiary butyl ether

Five Oxys = Five ether-based oxygenates [diisopropyl ether (DIPE), ethyl tertiary butyl

ether (ETBE), tert-amyl methyl ether (TAME), MTBE, and tert-butyl

alcohol (TBA)]

EDC = Ethylene dichloride 2

EDB = Ethylene dibromide 3

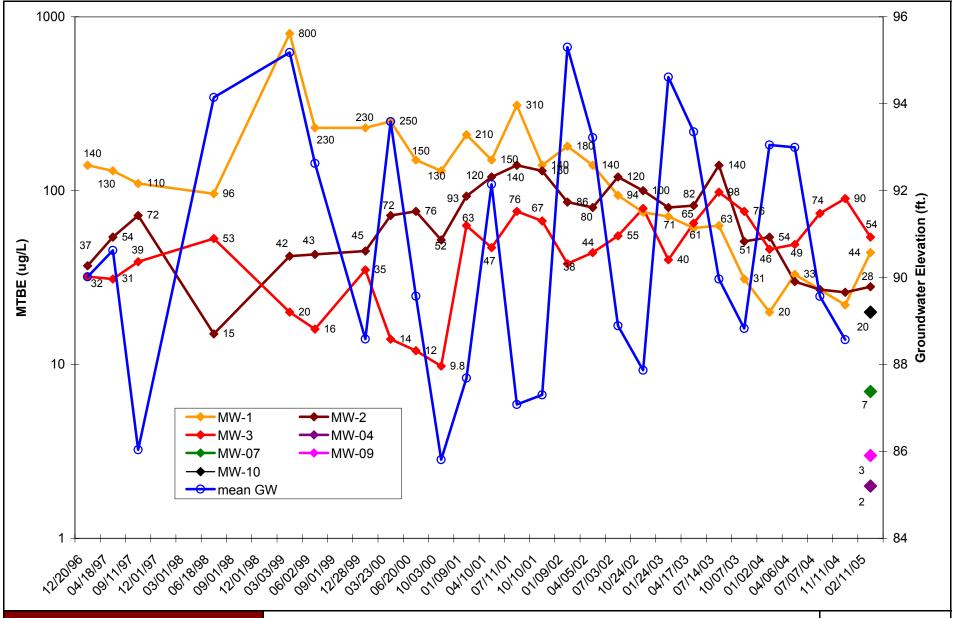
Pb Scavs = Lead scavengers (EDC, EDB)

mg/kg = Milligrams per kilogram

 μ g/L = Micrograms per liter

 2 EDC has been referred to as 1,2-dichloroethane (1,2-DCA) in previous reports.

³ EDB has been referred to as 1,2-dibromoethane in previous reports.



| SCS ENGIN | IEERS | MTBE & Groundwater Elevation vs Time | DIAGRAM |
|----------------------|--------------------|--------------------------------------|----------------|
| 3645 WESTWIND BO | DULEVARD | Ghilotti Construction Company | _ |
| SANTA ROSA, CALIF | FORNIA | 246 Ghilotti Avenue | A |
| PH: (707) 546-9461 F | -X: (707)544-5769 | Santa Rosa, California | |
| Drawn By: KLC | File Name: MTBE-GW | Job Number: 01203312.00 | DATE: 02/23/05 |

Table 1: Historical Soil Excavation, Stockpile and Groundwater Sample Analytical Results 246 Ghilotti Avenue, Santa Rosa

| Sample ID | Date | TPH-g | TPH-d | Lead | В | T | E | X | | |
|-------------|----------|-------|-------|-------|-------|------|--------|-------|--|--|
| Sample ID | Date | | | | mg/kg | | - | | | |
| SW-1E | 03/19/92 | ND | | 5.3 | ND | ND | ND | ND | | |
| SW-1W | 03/19/92 | ND | | 5.3 | ND | ND | ND | ND | | |
| SW-2E | 03/19/92 | | ND | | ND | ND | ND | ND | | |
| SW-2W | 03/19/92 | | ND | | ND | ND | ND | ND | | |
| SW-3E | 03/19/92 | | 12 | | ND | ND | ND | ND | | |
| SW-3W | 03/19/92 | | 10* | | ND | ND | ND | ND | | |
| SP-1 | 03/19/92 | 380** | | 18 | ND | ND | ND | 0.056 | | |
| SP-2 | 03/19/92 | | 970 | | ND | 0.11 | 0.08 | 0.43 | | |
| SP-3 | 03/19/92 | | 1800 | | ND | ND | ND | ND | | |
| FI-1 | 03/19/92 | 170** | 1100 | 5.1 | ND | ND | ND | 0.12 | | |
| Groundwater | | | mg/L | | | | | | | |
| GW-1 | 3/19/92 | 14** | 38 | 0.018 | 0.011 | ND | 0.0059 | 0.024 | | |

^{*} The positive result for TPH-d appears to be a heavier hydrocarbon than diesel.

Table 2: Historical Excavation Soil Sample Results 246 Ghilotti Avenue, Santa Rosa

| Cample ID | Data | TPH-g | TPH-d | Lead | В | T | E | X | | |
|-----------|----------|-------|-------|------|----|----|----|----|--|--|
| Sample ID | Date | | mg/kg | | | | | | | |
| SW-1 | 10/01/92 | ND | ND | 4.5 | ND | ND | ND | ND | | |
| SW-2 | 10/01/92 | ND | ND | 4.1 | ND | ND | ND | ND | | |
| SW-3 | 10/01/92 | ND | ND | 6 | ND | ND | ND | ND | | |
| SW-4 | 10/01/92 | ND | ND | 4.1 | ND | ND | ND | ND | | |
| B-1 | 10/01/92 | ND | ND | 6.1 | ND | ND | ND | ND | | |
| B-2 | 10/01/92 | ND | 1.8 | 3.8 | ND | ND | ND | ND | | |
| B-3 | 10/07/92 | 1.8* | 88 | 6.2 | ND | ND | ND | ND | | |
| B-4 | 10/07/92 | ND | 23 | 7.4 | ND | ND | ND | ND | | |
| B-5 | 10/07/92 | ND | ND | 4.9 | ND | ND | ND | ND | | |
| B-6 | 10/13/92 | ND | ND | 6.3 | ND | ND | ND | ND | | |
| B-7 | 10/13/92 | ND | ND | 6.9 | ND | ND | ND | ND | | |
| B-8 | 10/13/92 | ND | ND | 5.9 | ND | ND | ND | ND | | |

^{*} The positive result for TPH-g appears to be a heavier hydrocarbon than gasoline.

Table 3: Soil Sample Results - Borings B-1 through B-3 (MW-1 through MW-3) 246 Ghilotti Avenue, Santa Rosa

| Sample ID | Date | TPH-g | TPH-d | Lead | В | T | E | X | | | |
|-----------|----------|-------|-------|------|----|----|----|----|--|--|--|
| Sample 1D | Date | mg/kg | | | | | | | | | |
| B-1-9.0 | | ND | ND | 4.0 | ND | ND | ND | ND | | | |
| B-2-8.0 | 11/09/92 | ND | ND | 4.8 | ND | ND | ND | ND | | | |
| B-3-9.5 | | ND | ND | 4.9 | ND | ND | ND | ND | | | |

ND = Not Detected

^{**} The positive result for TPH-g appears to be a heavier hydrocarbon than gasoline.

Table 4: Soil Analytical Results - Monitoring Wells - 2005 246 Ghilotti Avenue, Santa Rosa

| ID | Doto | TPH-g | TPH-d | В | T | E | X | MTBE |
|--------------|----------|-------|-------|---------|---------|---------|----------|----------|
| ID | Date | | | | mg/kg | | | |
| MW-04@5.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-04@10.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-04@15.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-04@20.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-05@5.5' | 02/01/05 | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-05@11.0' | 02/01/03 | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-05@15.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-06@5.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-06@10.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-06@15.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-07@6.5' | | <1.0 | NA** | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-07@11.0'* | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-07@15.5' | 02/02/05 | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-08@5.5' | 02/02/03 | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-08@10.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-08@15.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-09@5.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-09@11.0' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-09@16.0' | 02/03/05 | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-10@6.0' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-10@10.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |
| MW-10@15.5' | | <1.0 | < 5.0 | < 0.005 | < 0.005 | < 0.005 | < 0.0015 | < 0.0025 |

^{*} Contained lead at a concentration of 3.6 mg/kg.

NA = Not Analyzed

^{**} Limited sample recovery.

Table 5: Groundwater Flow Direction and Gradient - 1996 to Present 246 Ghilotti Avenue, Santa Rosa

| Well # | Date | Top of Casing Elevation | Depth to Groundwater | Water Level Elevation | Groundwater Flow Direction & |
|------------------------|-----------|-------------------------|-------------------------|--------------------------|---------------------------------|
| νν c Π <i>π</i> | Measured | (ft. > msl) | (feet) | (ft. > msl) | Gradient (i) |
| MW-1 | | 99.48 | 7.42 | 92.06 | |
| MW-2 | 06/24/96 | 99.77 | 7.67 | 92.1 | S10°W |
| MW-3 | 00,2.,,0 | 99.38 | 7.58 | 91.8 | i = 0.005 |
| MW-1 | | 99.48 | 10.00 | 89.48 | |
| MW-2 | 12/20/96 | 99.77 | 10.5 | 89.27 | N80°W |
| MW-3 | 12/20/50 | 99.38 | 10.1 | 89.28 | i = 0.003 |
| MW-1 | | 99.48 | 7.19 | 92.29 | |
| MW-2 | 04/18/97 | 99.77 | 7.41 | 92.36 | S10°W |
| MW-3 | 0 1/10/57 | 99.38 | 7.34 | 92.04 | i = 0.005 |
| MW-1 | | 99.48 | 13.29 | 86.19 | |
| MW-2 | 09/11/97 | 99.77 | 13.65 | 86.12 | - S30°W |
| MW-3 | 05/11/57 | 99.38 | 13.57 | 85.81 | i = 0.006 |
| MW-1 | | 99.48 | 5.28 | 94.2 | |
| MW-2 | 06/19/98 | 99.77 | 5.62 | 94.15 | S48°W |
| MW-3 | 00,17,70 | 99.38 | 5.3 | 94.08 | i = 0.002 |
| MW-1 | | 99.48 | 3.35 | 96.13 | <u> </u> |
| MW-2 | 03/03/99 | 99.77 | 3.57 | 96.2 | S10°W |
| MW-3 | 03/03/99 | 99.38 | 3.33 | 96.05 | i = 0.002 |
| MW-1 | | 99.48 | 6.79 | 92.69 | <u> </u> |
| MW-2 | 06/02/99 | 99.48 | 6.91 | 92.86 | Due South |
| MW-3 | 00/02/99 | 99.77 | 7.04 | 92.34 | i = 0.008 |
| MW-1 | | 99.48 | 12.73 | 86.75 | |
| MW-2 | 12/28/99 | 99.48 | 13.16 | 86.61 | S55°W |
| MW-3 | 12/26/99 | 99.77 | 12.86 | 86.52 | i = 0.003 |
| | | | | | <u> </u> |
| MW-1 MW-2 | 03/23/00 | 99.48 99.77 | 4.85 | 94.63 94.44 | N68°W |
| MW-3 | 03/23/00 | 99.77 | 5.33 4.91 | 94.44 | i = 0.03 |
| | | 99.48 | | | |
| MW-1 MW-2 | 06/20/00 | 99.48 | 8.44 8.84 | 91.04 | S55°W |
| MW-3 | 00/20/00 | 99.77 | 8.57 | 90.93 | i = 0.003 |
| | | | | | <u> </u> |
| MW-1 MW-2 | 10/03/00 | 99.48 99.77 | 13.6 13.98 | 85.88 85.79 | S35°W |
| MW-3 | 10/03/00 | 99.77 | 13.87 | 85.51 | i = 0.005 |
| | | 99.48 | 13.31 | 86.17 | <u> </u> |
| MW-1 MW-2 | 01/09/01 | 99.48 | 13.71 | 86.17 | N75°W |
| MW-3 | 01/09/01 | 99.77 | 13.71 | 86.07 | i = 0.002 |
| | <u>I</u> | 99.38 | 6.79 | 92.69 | <u> </u> |
| MW-1 MW-2 | 04/10/01 | 99.48 | 7.22 | 92.55 | S65°W |
| MW-3 | 04/10/01 | 99.77 | 6.92 | 92.33 | i = 0.003 |
| | | l . | | 88.09 | |
| MW-1 MW-2 | 07/11/01 | 99.48 99.77 | 11.39 11.87 | 88.09 87.90 | West |
| MW-3 | 07/11/01 | 99.77 | 11.50 | 87.90 87.88 | i = 0.003 |
| MW-1 | <u> </u> | 99.48 | 14.78 | 84.70 | <u> </u> |
| MW-1 MW-2 | 10/10/01 | 99.48 | 15.24 | 84.70 | S75°W |
| MW-3 | 10/10/01 | 99.77 | 14.93 | 84.45 | i = 0.004 |
| | <u> </u> | | | | |
| MW-1 | 01/09/02 | 99.48 99.77 | 3.75 | 95.73 | S20°W |
| MW-2 | 01/09/02 | | 4.06 | 95.71 | i = 0.003 |
| MW-3 |] | 99.38 | 3.85 | 95.53 | |

Table 5: Groundwater Flow Direction and Gradient - 1996 to Present 246 Ghilotti Avenue, Santa Rosa

| | - | - 46 A A | Depth to | Water Level | Groundwater Flow |
|--------|-----------|-------------------------|-------------|-------------|-------------------------|
| Well # | Date | Top of Casing Elevation | Groundwater | Elevation | Direction & |
| | Measured | (ft. > msl) | (feet) | (ft. > msl) | Gradient (i) |
| MW-1 | | 99.48 | 5.09 | 94.39 | CEOOW |
| MW-2 | 04/05/02 | 99.77 | 5.44 | 94.33 | S50°W |
| MW-3 | | 99.38 | 5.15 | 94.23 | i = 0.002 |
| MW-1 | | 99.48 | 9.25 | 90.23 | S75°W |
| MW-2 | 07/03/02 | 99.77 | 9.74 | 90.03 | |
| MW-3 | | 99.38 | 9.44 | 89.94 | i = 0.004 |
| MW-1 | | 99.48 | 13.70 | 85.78 | S40°W |
| MW-2 | 10/24/02 | 99.77 | 14.13 | 85.64 | i = 0.005 |
| MW-3 | | 99.38 | 14.01 | 85.37 | 1 – 0.003 |
| MW-1 | | 99.48 | 4.65 | 94.83 | S30°W |
| MW-2 | 01/22/03 | 99.77 | 4.97 | 94.80 | i = 0.002 |
| MW-3 | | 99.38 | 4.69 | 94.69 | 1 - 0.002 |
| MW-1 | | 99.48 | 5.20 | 94.28 | S45°W |
| MW-2 | 04/17/03 | 99.77 | 5.55 | 94.22 | i = 0.002 |
| MW-3 | | 99.38 | 5.25 | 94.13 | 1 – 0.002 |
| MW-1 | | 99.48 | 8.44 | 91.04 | S75°W |
| MW-2 | 07/14/03 | 99.77 | 8.90 | 90.87 | i = 0.003 |
| MW-3 | | 99.38 | 8.59 | 90.79 | 1 – 0.003 |
| MW-1 | | 99.48 | 11.75 | 87.73 | S55°W |
| MW-2 | 10/07/03 | 99.77 | 12.01 | 87.76 | i = 0.004 |
| MW-3 | | 99.38 | 12.21 | 87.17 | 1 – 0.004 |
| MW-1 | | 99.48 | 6.68 | 92.80 | S80°W |
| MW-2 | 01/02/04 | 99.77 | 7.08 | 92.69 | i = 0.002 |
| MW-3 | | 99.38 | 6.72 | 92.66 | 1-0.002 |
| MW-1 | | 99.48 | 5.21 | 94.27 | S45°W |
| MW-2 | 04/06/04 | 99.77 | 5.58 | 94.19 | i = 0.002 |
| MW-3 | | 99.38 | 5.32 | 94.06 | 1 – 0.002 |
| MW-1 | | 99.48 | 9.71 | 89.77 | S65°W |
| MW-2 | 07/07/04 | 99.77 | 10.18 | 89.59 | i = 0.003 |
| MW-3 | | 99.38 | 9.92 | 89.46 | 1 0.003 |
| MW-1 | | 99.48 | 11.71 | 87.77 | N60°W |
| MW-2 | 11/23/04 | 99.77 | 12.17 | 87.60 | i = 0.003 |
| MW-3 | | 99.38 | 11.73 | 87.65 | 1 0.003 |
| MW-1 | | 99.48 | 4.90 | 94.58 | |
| MW-2 | | 99.77 | 5.21 | 94.56 | |
| MW-3 | | 99.38 | 4.86 | 94.52 | |
| MW-04 | | 98.31 | 3.87 | 94.44 | |
| MW-05 | 02/11/05* | 100.20 | 5.52 | 94.68 | SW |
| MW-06 | | 100.95 | 6.23 | 94.72 | i = 0.002 |
| MW-07 | | 100.17 | 5.57 | 94.60 | |
| MW-08 | , | 98.37 | 3.89 | 94.48 | |
| MW-09 | , | 98.46 | 4.02 | 94.44 | _ |
| MW-10 | | 98.04 | 3.73 | 94.31 | |

Note: Groundwater flow direction is rounded to the nearest 5° beginning in 1996 except for the 06/19/98 and 03/23/00 calculations.

^{*} MW-04 through MW-10 were surveyed to msl on March 9, 2005.

Table 6: Domestic Well Analytical Results 246 Ghilotti Avenue, Santa Rosa

| ID | Date | TPH-g | TPH-d | В | Т | E | X | MTBE* | OTHER OXY'S* | |
|------|----------|-------|-------|------|-------|-------|-------|-------|-----------------|--|
| | Sampled | μg/L | | | | | | | | |
| | 07/21/98 | < 50 | NA | < 50 | < 0.3 | < 0.5 | < 0.5 | 3.4 | NA | |
| | 08/05/99 | < 50 | NA | < 50 | < 0.3 | < 0.5 | < 0.5 | 3 | NA | |
| | 12/28/99 | < 50 | NA | < 50 | < 0.3 | < 0.5 | < 0.5 | 1 | <1.0 | |
| | 03/23/00 | < 50 | < 50 | < 50 | < 0.3 | < 0.5 | < 0.5 | 1.5 | <1.0 | |
| | 06/20/00 | < 50 | < 50 | < 50 | < 0.3 | < 0.5 | < 0.5 | <1.0 | <1.0 | |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 1.5 | <1.0 | |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 1.1 | <1.0 | |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 07/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | <1.0 | NA | |
| | 02/14/02 | NA | NA | NA | NA | NA | NA | <1.0 | NA | |
| DW-1 | 04/05/02 | NA | NA | NA | NA | NA | NA | 0.59 | <1.0 | |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | < 0.5 | <1.0 | |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | < 0.5 | <1.0 | |
| | 02/14/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | <1.0 | <1.0 | |

Note:

^{*} Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; <25 μ g/L For TBA.

Table 7: Groundwater Analytical Results - Monitoring Wells 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | ТРН-g | TPH-d | В | T | E | X | MTBE* | OTHER OXY'S |
|------------|-----------------|-------|-------|-------|-------|----------|-------|-------|----------------|
| | - | | | | , , | <u> </u> | | | |
| | 06/24/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | NA | NA |
| | 12/20/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 140 | NA |
| | 04/18/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 130 | NA |
| | 09/11/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 110 | NA |
| | 06/19/98 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 96 | <1.0 |
| | 03/03/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 800 | NA |
| | 03/24/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 360 | NA |
| | 03/26/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 250 | NA |
| | 06/02/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 230 | NA |
| | 12/28/99 | < 50 | NA | < 0.3 | 0.66 | < 0.5 | < 0.5 | 230 | <1.0 |
| | 03/23/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 250 | <1.0 |
| | 06/20/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 150 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 130 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 210 | <1.0 |
| MW-1 | 04/10/01 | NA | NA | NA | NA | NA | NA | 150 | NA |
| IVI VV - I | 07/10/01 | NA | NA | NA | NA | NA | NA | 310 | NA |
| | 10/10/01 | NA | NA | NA | NA | NA | NA | 140 | NA |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 180 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 140 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 94 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 75 | <1.0 |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 71 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 61 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 63 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 31 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 20 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 33 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 27 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 22 | NA |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 44 | <1.0 |

Table 7: Groundwater Analytical Results - Monitoring Wells 246 Ghilotti Avenue, Santa Rosa

| ID | Date Sampled | TPH-g | TPH-d | В | Т | E | X | MTBE* | OTHER OXY'S |
|-----------|-----------------|-------|-------|-------|-------|-------|-------|-------|----------------|
| | Sampleu | | | | με | g/L | | | |
| | 06/24/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | NA | NA |
| | 12/20/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 37 | NA |
| | 04/18/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 54 | NA |
| | 09/11/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 72 | NA |
| | 06/19/98 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 15 | <1.0 |
| | 03/03/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 42 | NA |
| | 06/02/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 43 | NA |
| | 12/28/99 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 45 | <1.0 |
| | 03/23/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 72 | <1.0 |
| | 06/20/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 76 | <1.0 |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 52 | <1.0 |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 93 | <1.0 |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | 120 | NA |
| MW-2 | 07/10/01 | NA | NA | NA | NA | NA | NA | 140 | NA |
| 101 00 -2 | 10/10/01 | NA | NA | NA | NA | NA | NA | 130 | NA |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 86 | NA |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 80 | <1.0 |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 120 | <1.0 |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 100 | <1.0 |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 80 | <1.0 |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 82 | <1.0 |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 140 | <1.0 |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 51 | <1.0 |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 54 | <1.0 |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 30 | <1.0 |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 27 | <1.0 |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 26 | <1.0 |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 28 | <1.0 |

Table 7: Groundwater Analytical Results - Monitoring Wells 246 Ghilotti Avenue, Santa Rosa

| ID | Date | TPH-g | TPH-d | В | Т | E | X | MTBE* | OTHER OXY'S | |
|-----------|----------|-------|-------|-------|-------|-------|-------|-------|----------------|--|
| | Sampled | | | | με | g/L | | | | |
| | 06/24/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | NA | NA | |
| | 12/20/96 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 32 | NA | |
| | 04/18/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 31 | NA | |
| | 09/11/97 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 39 | NA | |
| | 06/19/98 | < 50 | NA | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 53 | <1.0 | |
| | 03/03/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 20 | NA | |
| | 06/02/99 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 16 | NA | |
| | 12/28/99 | < 50 | NA | < 0.3 | 0.45 | < 0.5 | < 0.5 | 35 | <1.0 | |
| | 03/23/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 14 | <1.0 | |
| | 06/20/00 | < 50 | < 50 | < 0.3 | < 0.3 | < 0.5 | < 0.5 | 12 | <1.0 | |
| | 10/03/00 | NA | NA | NA | NA | NA | NA | 9.8 | <1.0 | |
| | 01/09/01 | NA | NA | NA | NA | NA | NA | 63 | <1.0 | |
| | 04/10/01 | NA | NA | NA | NA | NA | NA | 47 | NA | |
| MW-3 | 07/10/01 | NA | NA | NA | NA | NA | NA | 76 | NA | |
| 1V1 VV -3 | 10/10/01 | NA | NA | NA | NA | NA | NA | 67 | NA | |
| | 01/09/02 | NA | NA | NA | NA | NA | NA | 38 | NA | |
| | 04/05/02 | NA | NA | NA | NA | NA | NA | 44 | <1.0 | |
| | 07/03/02 | NA | NA | NA | NA | NA | NA | 55 | <1.0 | |
| | 10/24/02 | NA | NA | NA | NA | NA | NA | 79 | <1.0 | |
| | 01/24/03 | NA | NA | NA | NA | NA | NA | 40 | <1.0 | |
| | 04/17/03 | NA | NA | NA | NA | NA | NA | 65 | <1.0 | |
| | 07/14/03 | NA | NA | NA | NA | NA | NA | 98 | <1.0 | |
| | 10/07/03 | NA | NA | NA | NA | NA | NA | 76 | <1.0 | |
| | 01/02/04 | NA | NA | NA | NA | NA | NA | 46 | <1.0 | |
| | 04/06/04 | NA | NA | NA | NA | NA | NA | 49 | <1.0 | |
| | 07/07/04 | NA | NA | NA | NA | NA | NA | 74 | <1.0 | |
| | 11/23/04 | NA | NA | NA | NA | NA | NA | 90 | <1.0 | |
| | 02/11/05 | NA | NA | NA | NA | NA | NA | 54 | <1.0 | |
| MW-04 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | 1.1 | 1.9 | <1.0 | |
| MW-05 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | |
| MW-06 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | |
| MW-07 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 6.9 | <1.0 | |
| MW-08 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | |
| MW-09 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 3.2 | <1.0 | |
| MW-10 | 02/11/05 | < 50 | NA | <1.0 | <1.0 | <1.0 | <1.0 | 20 | <1.0 | |

Note: *Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; <25 µg/L For TBA.

Table 8: CPT Groundwater Analytical Results 246 Ghilotti Avenue, Santa Rosa

| Sample ID | Date | TPH-g | TPH-d | MTBE | В | Т | E | X | OTHER OXY'S* |
|--------------|----------|-------|-------|-------|------|------|------|------|-----------------|
| | | | | | ug | g/L | | | |
| CPT-01@38.0' | 03/02/05 | < 50 | < 50 | 2.8* | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| CPT-01@82.0' | 03/02/05 | < 50 | < 50 | <1.0* | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |

Note:

^{*} Analysis for MTBE by EPA Method 8020; Analysis for 5 oxy's (including MTBE) by EPA Method 8260B; $<25 \mu g/L$ For TBA.

APPENDIX A

UNIFIED SOIL CLASSIFICATION LEGEND BORINGS LOGS LEGEND DWR 188 FORMS

| GENE | RAL SOIL CAT | EGORIES | - | BOLS | TYPICAL SOIL TYPES | | | | |
|--|--|------------------------------|--------------------------|--------|---|--|--|--|--|
| | | Clean Gravel | X | GW | Well Graded Gravels, Gravel - Sand mixtures | | | | |
| ω ω | Gravel More than half of | with little or no fines | | GP | Poorly Graded Gravels, Gravel - Sand mixtures | | | | |
| ED SOILS is larger sieve | coarse fraction is larger than No. 4 sieve size | Gravel with | | GM | Silty Gravels, Poorly Graded; Gravel - Sand - Silt Mixtures | | | | |
| OARSE GRAINED SOIL More than half is larger than no. 200 sieve | | more than 12% fines | | GC | Clayey Gravels, Poorly Graded; Gravel - Sand - Clay Mixtures | | | | |
| ARSE GRA | Sand | Clean Sand with little or | 0.00 | SW | Well Graded Sands, Gravelly Sands | | | | |
| COARSE More th | More than half of | no fines | | SP | Poorly Graded Sands, Gravelly Sands | | | | |
| Ö | coarse fraction is smaller than No. 4 sieve size | Sand with more than | | SM | Silty Sands, Poorly Graded; Sand - Silt Mixtures | | | | |
| | | 12% fines | | SC | Clayey Sands, Poorly Graded; Sand - Clay Mixtures | | | | |
| | Silt and Clay | | | ML | Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity | | | | |
| SOILS s smalle sieve | Liquid Limit Less | | | CL | Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays | | | | |
| INED Salf is s | than 50% | | | OL | Organic Silts and Organic Silty Clays of Low Plasticity | | | | |
| GRAI nan h | Silt and Clay | | | МН | Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silts | | | | |
| FINE fore th | Liquid Limit Greater | | | СН | Inorganic Clays of High Plasticity, Fat Clays | | | | |
| 2 | than 50% | | | ОН | Organic Clays of Medium to High Plasticity | | | | |
| | Highly Organic So | ils | 7 77 7 | PT | Peat and Other Highly Organic Soils | | | | |
| | Bedrock | | | BR | Bedrock | | | | |
| | Aggregate Base | | X | В | Mixed Fill | | | | |
| | Asphalt | | X | Α | Asphalt | | | | |
| | Concrete | | | С | Concrete | | | | |
| | mple submitted for chen | · | CMS SPT CBS GRA | = Stan | Modified Split Spoon dard Penetration Test ☐ First Identified Free Water cinuous Barrel Sample ☐ n.a. = not applicable | | | | |

SCS ENGINEERS

Environmental Consultants 3645 Westwind Bouevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

UNIFIED SOIL CLASSIFICATION SYSTEM CHART and BORING LOG LEGEND

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00 Figure

Appendix A A-1 1 of 1

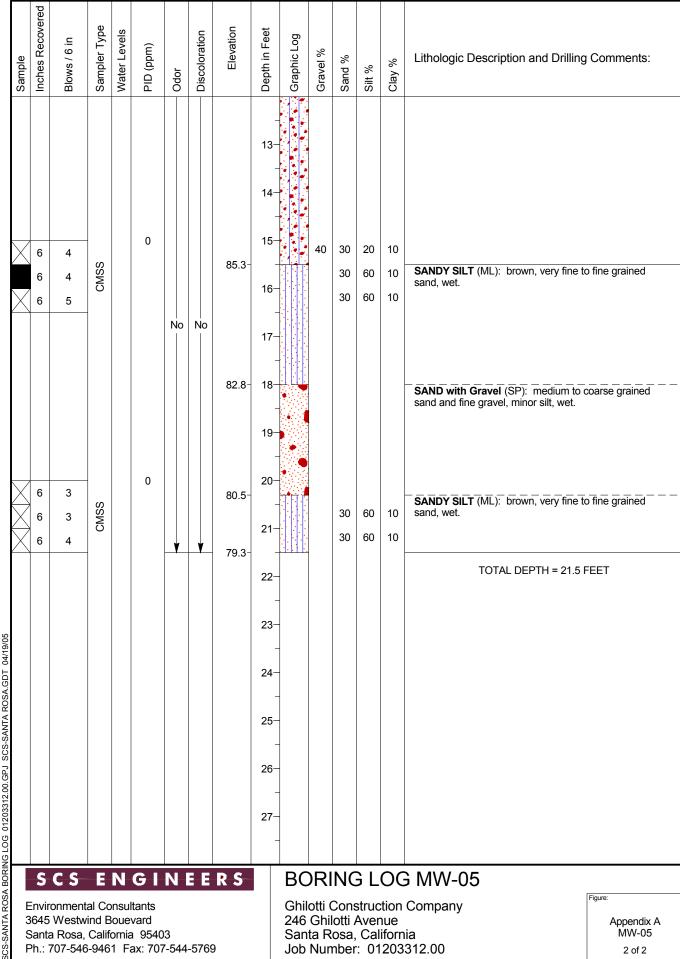
| Da | te (s | tart, er | nd): | 2/1 | /05 - 2 | 2/1/0 | 5 | | | Bor | ing I | No. | Bor | ng L | ocation: See site plan | |
|-------------------------|------------------|--------------------|--------------|--------------|-----------|--------|---------------|---------------|---------------|--|-------------|--------------|-----------------|--------------|---|--------|
| | • | Time (| , | | | | | 30 | | | W-(| | | Ū | · | |
| Lo | gged | d By: | | | - | | | | | | • | , , | | | fied Soil Classification System (USCS) | |
| | | ed By: | | | | | | | | | | | | | nd and information not noted. | |
| | _ | Contra Name | | | | | rilling | | | | | | | | stalled: Y⊠ N□ if no, boring backfilled with: | |
| | | Metho | | | | | Aug | | | | | | • | | nt | ps∟ |
| Sa | mpli | ng Met | thod: | CN | 1SS | | | | | | | | Aı | uger | Depth, ft: 20.5 Total Depth, ft: 21.5 | |
| | mmotes: | er weig | jht / f | all:_ | 140 lb | s / 30 |) inch | 1 | | | | | | | | |
| INC | ies. | | | | | | | | | | | | | | | |
| | ered | | | | | | | | | | | | | | | |
| | Inches Recovered | .⊑ | Sampler Type | vels | | | tion | Elevation | Feet | go. | | | | | | |
| ole | ss Re | 9/8 | oler - | r Le | mdd | | olora | Eleva | h ii | hicL | % | % | | % | Lithologic Description and Drilling Comments: | |
| Sample | nche | Blows / 6 | Samp | Water Levels | PID (ppm) | Odor | Discoloration | | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay | | |
| ° | | | " | | _ | A | <u> </u> | 98.8 98.5- | _ | | | | " | | ASPHALT: over base rock. | |
| | | | | | | | | 90.5 | | | Į | | | | | |
| | | | | | | | | 97.8- | 1- | 7.7.7 | | | | | SANDY CLAY (CL): dark gray, very fine to fine graine | ed |
| | | | | | | | | | | -/// | | | | | sand, trace fine gravel, moist. | |
| | | | | | | | | | 2- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | 3- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | Moderate to light brown. | |
| | | | | | | | | | 4- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| $\overline{}$ | 6 | 5 | 1 | | 0 | | | | 5- | | | 30 | 30 | 40 | | |
| $\langle \cdot \rangle$ | | | CMSS | | | | | | | - | Т | 30 | 30 | 40 | | |
| | 6 | 9 | CM | | | No | No | 92.8- | 6- | | 20 | 30 | 20 | 30 | SANDY CLAY with Gravel (CL): brown, very fine to | |
| <u> </u> | 6 | 13 | | | | | | | | - | 20 | 30 | 20 | 30 | medium grained sand, fine gravel, rounded, moist to w | |
| | | | | | | | | | 7- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | •/• | | | | | | |
| | | | | | | | | | 8- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | 89.8- | 9- | | | | | | CLAY with Sand (CL): brown, very fine to fine grains | ed |
| | | | | | | | | | | - | - | | | | sand, moist to wet. | |
| X | | | - | | 0 | | | | 10- | - //// | | 15 | 35 | 50 | | |
| X | 6 | 3 | SS | | | | | | | | | | | | | |
| | 6 | 4 | CMSS | | | | | | 11- | \.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\. | | 15 | 35 | 50 | | |
| X | 6 | 6 | | Δ | | | | | | | | 15 | 35 | 50 | | |
| | | | | | | | | | | | | | | | | |
| | S | C S | E | N | G I | Ν | ΕE | R S | | BC | R | NC | 3 L | OC | 6 MW-04 | |
| | | onment | | | | | | | | | | | | | Company Figure: | |
| (| 3645 | Westw | vind E | Boue | vard | | | | | 246 | Ghi | lotti . | Avei | nue | Appendix A | Α |
| | | a Rosa, 707-546 | | | | | -5769 | 9 | | San Job | ta R Nur | osa, nher | , Cal r: 01 | itorn 203 | iia MW-04 312.00 1 of 2 | |
| | | | | • • • | | | ٥. ٥٠ | - | | 335 | | | | _55 | 1012 | |

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|------------------|--------------|--------------|--------------|-----------|------|---------------|----------------|-----------------|-------------|----------|----------|----------|---------|--|
| | | | | | | | | 86.3- | 13- | | | | | | SANDY SILT (ML): brown, very fine to fine grained sand, wet. |
| | | | | | | | | | 14- | | | | | | |
| X | 6 | 3 | တ္တ | | | | | | 15 - | | | 30 | 50 | 20 | |
| \times | 6 | 4 6 | CMSS | | | | | | 16- | | | 30 | 50 50 | 20 | |
| | | | | | | No | No | | 17- | | | | | | |
| | | | | | | | | 80.8- | 18- | | | | | | SILTY SAND (SM): brown, very fine to fine grained sand, wet. |
| | | | | | | | | | 19- | | | | | | |
| X | 6 | 3 | SS | | | | | | 20- | | | 50 | 40 | 10 | |
| \times | 6 | 10 20 | CMSS | | | | V | 77.8- 77.3- | 21- | | | 50 85 | 40 10 | 10 5 | SAND with Silt (SP-SM): brown, fine to medium grained sand, wet. |
| | | | | | | | | | 22- | | | | | | TOTAL DEPTH = 21.5 FEET |
| 19/05 | | | | | | | | | 23- | - | | | | | |
| SA.GDT 04/ | | | | | | | | | 24- | - | | | | | |
| S-SANTA RC | | | | | | | | | 25- | | | | | | |
| 2.00.GPJ SC | | | | | | | | | 26- | | | | | | |
| .0G 0120331 | | | | | | | | | 27- | - | | | | | |
| ROSA BORING LOG 01203312.00.GPJ SCS-SANTA ROSA GDT 04/19/05 | | C S | | | | N I | E E | R S | Π | | | | | | 6 MW-04 Company |

Environmental Consultants 3645 Westwind Bouevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769 Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-04 2 of 2

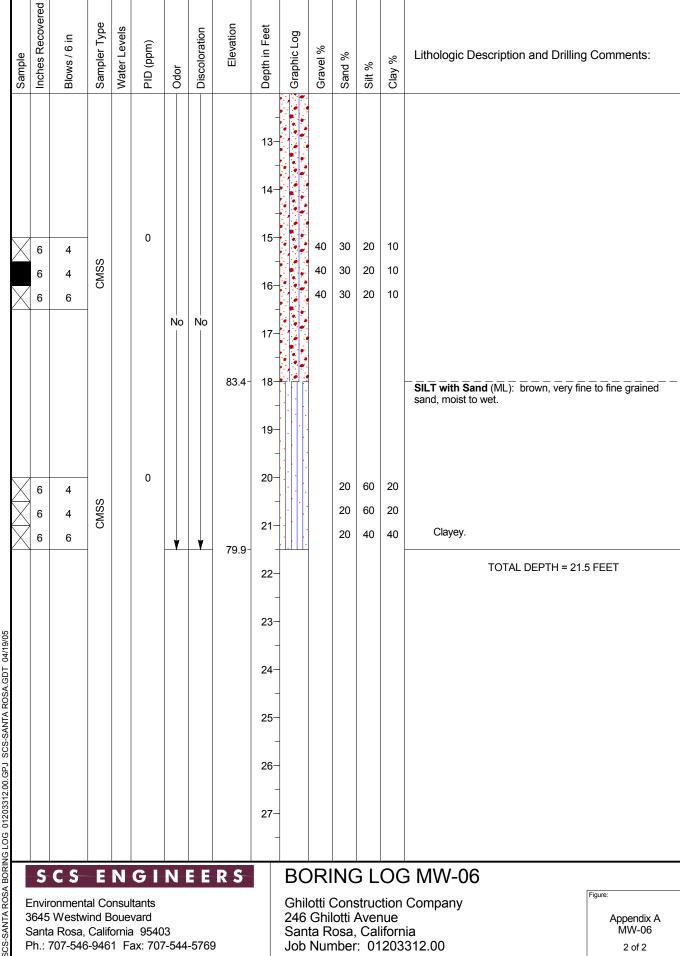
| Dri Lo | illing gged | start, en Time (d By: ed By: | start, | enc | d) 10 |):45 - | | 30 | | | ring f | | See | e Unit | ocation: See site plan fied Soil Classification System (USCS) nd and information not noted. | |
|------------------------|---------------------------|--|---------------------------------------|-------------------------|--------------------------|------------|---------------|----------------|----------------------------|--------------------|--------------------------|----------------|----------------------|-----------------------|--|---|
| Dri Dri Sa Ha | iller's illing mpli | Contra Name Methoon ng Met er weig | : <u>Ric</u> d: <u>8-i</u> hod: | k So in Ho CM | chnied ollow-9 ISS | er Stem | Aug | er | | | | | C | emer | stalled: Y⊠ N□ if no, boring backfilled with: at □ Bentonite: Cement □ Grout □ Chips Depth, ft: 20.5 Total Depth, ft: 21.5 | s |
| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | 8.00 Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: | |
| | | | | | | | | 99.8- | 1- 2- 3- | | | | | | GRAVEL BASE SANDY CLAY (CL): dark gray, very fine to fine grained sand, trace fine gravel, moist. | i |
| S0.61 to 130.49 | 6 6 | 3 8 12 | CMSS | | 0 | No | No | 95.6- 94.5- | 4- 5- 6- 7- 8- | | T | 10 20 | 30 30 60 | 60 70 20 | CLAY (CL): brown, silty, moist. SILT with Sand (ML): light brown, very fine to fine grained sand, minor clay, moist. | |
| | 6 6 | 6 24 24 | CMSS | Σ | 0 | | | 89.8- | 9- 10- 11- | - | 5 15 50 | 20 20 20 | 60 50 20 | 15 15 10 | With minor gravel. GRAVEL with Silt and Sand (GP-GM): brown, fine gravel, fine to coarse grained sand, moist to wet. | |
| | Envir 3645 Santa | C S conment Westwa Rosa, 707-546 | tal Co ind E Calif | onsul Boue Fornia | Itants vard a 9540 |)3 | | R S | | Ghil 246 San | lotti (Ghil ıta R | Consolotti A | struc Aver Cal | tion nue liforn | 6 MW-05 Company ia Appendix A MW-05 312.00 1 of 2 | |



3645 Westwind Bouevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-05 2 of 2

| Dr Lo | illing gge | start, en Time (d By: ed By: | start, | end | d) 13 | 3:45 | | 15 | | | ring I | | See | e Unit | ocation: See site plan fied Soil Classification System (USCS) nd and information not noted. | |
|-----------------------------|---------------------------|--|---------------------------------------|--------------------|--------------------------|-------------|-----------------|---------------------|---------------|-------------|--------------|------------------|----------------|----------------|--|---|
| Dri Dr Sa Ha | iller's illing ımpl | Contra Name Metholing Met er weig | : <u>Ric</u> d: <u>8-i</u> hod: | k So n Ho CN | chnied ollow-9 ISS | ler Stem | Aug | er | | | | | C | emer | stalled: Y⊠ N□ if no, boring backfilled with: It □ Bentonite: Cement □ Grout □ Chips Depth, ft: <u>20.5</u> Total Depth, ft: <u>21.5</u> | ; |
| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | - Discoloration | 101 F. Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: | |
| | | | | | | | A | 100.4- | 1- 2- | | | | | | SANDY CLAY: dark gray, very fine to fine grained sand, trace fine gravel, moist. | |
| | | | | | | | | | 3- | | | | | | | |
| X | 6 6 | 3 3 4 | CMSS | | 0 | No | No | | 5- 6- | | T 20 T | 30 20 40 | 30 20 20 | 40 40 40 | ~0.2' thick gravelly clay layer. | |
| SCS-SANIA ROSA.GDI 04/19/05 | | | | | | | | 92.4- | 8- 9- | | | | | | GRAVEL with Silt and Sand (GP-GM): brown, fine ar | |
| 01203312.00.GPJ SCS-SA | 1 6 | 8 9 | CMSS | Ā | 0 | | | | 10- | | 40 40 | 25 25 | 25 25 | 10 | coarse gravel and fine to coarse grained sand, wet. | |
| | 6 S | 12 C S | | N | GΙ | N | E E | R S | | BC | PRI | 25 N (| 25 3 L | 10 OC | 6 MW-06 | _ |
| SANTA | 3645 Sant | ronment Westw a Rosa, 707-546 | ind E Calif | Boue Fornia | vard a 9540 | | -576 | 9 | | 246 San | Ghi ta R | lotti . losa, | Aver , Cal | nue iforn | Company ia Appendix A MW-06 1 of 2 | |



Environmental Consultants 3645 Westwind Bouevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769 Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-06 2 of 2

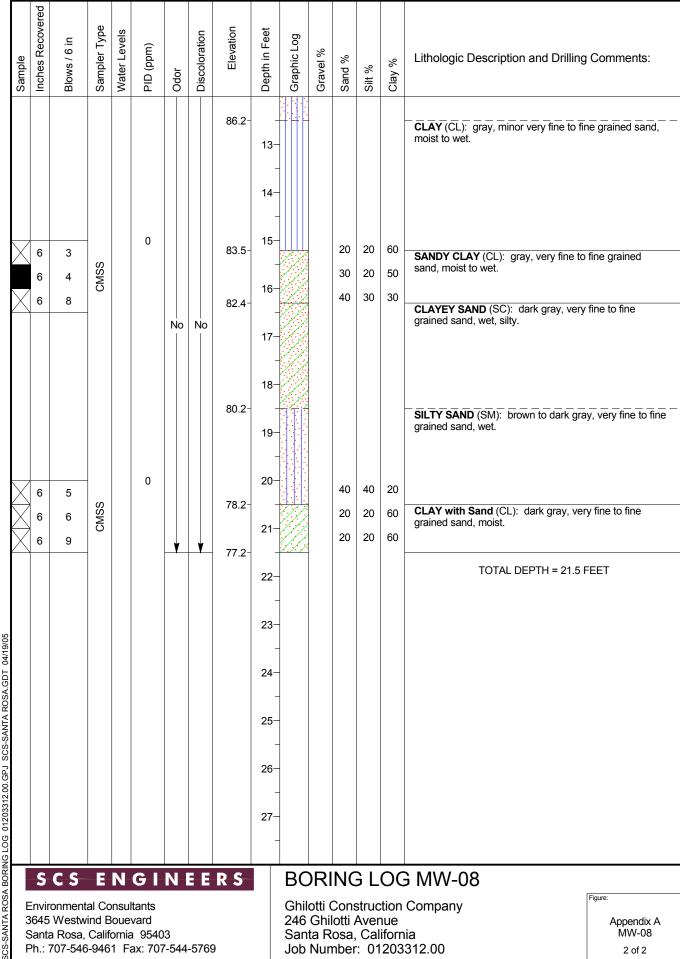
| Dri | ling | tart, en | start, | enc | 30 (b | 3:30 - | | 00 | | | ring I | | | | ocation: See site plan |
|---------------------------|-----------------------|---------------------------------------|---------------------------------------|--------------------|--------------------------|-------------|---------------|----------------|-----------------|-------------|-------------|------------------|--------------|---------------|--|
| _ | - | l By: ed By: | Siep | ilen | ı MIUÜ | lel | | | | | | | | | fied Soil Classification System (USCS) and and information not noted. |
| Dril Dril Sal Ha | ler's ling npli | Contra Name Methong Meter weig | : <u>Ric</u> d: <u>8-i</u> hod: | k So n Ho CM | chnied ollow-9 ISS | ler Stem | Aug | er | | | | | С | emer | stalled: Y⊠ N□ if no, boring backfilled with: nt □ Bentonite: Cement □ Grout □ Chips Depth, ft: 20.5 Total Depth, ft: 21.5 |
| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | 9.00 Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
| | | | | | | A | A | 100.4- | | | | | | | ASPHALT: over base rock. |
| | | | | | | | | 99.6- | 1- 2- | | | | | | SANDY SILT with Gravel (ML): dark gray, moist, (Fill). |
| | 0 0 5 | 3 4 7 | CMSS | | 0 | No | No | 96.6- | 3·4·4·5·6·6· | | 5 | 30 | 30 | 35 | SANDY CLAY (CL): dark brown, very fine to fine grained sand, minor fine gravel, moist. |
| | | | | | | | | 92.6- | 8- | | | | | | SILTY GRAVEL (GM): brown to gray, fine and coarse gravel and fine to coarse grained sand, moist to wet. |
| | | | | | 0 | | | | 10 [.] | | | | | | |
| \nearrow | 6 | 17 11 | CMSS | Ā | | | | | | | 40 | 30 25 | 30 | 5 | |
| / \ | 6 | 13 | 5 | | | | | 89.4- | 11 ⁻ | - T - | | | | | CLAY (CL): brown, moist. |
| | S | C S | E | N | GΙ | N | E E | R S | | BC | RI | NC | 3 L | OC | 6 MW-07 |
| 3 | 645 Santa | onment Westw a Rosa, 707-546 | ind E Calif | Boue ornia | vard a 9540 | | -5769 | 9 | | 246 San | Ghi ta R | lotti . losa, | Aveı , Ca | nue liforn | Company Appendix A MW-07 312.00 1 of 2 |

| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|---|------------------|--------------|--------------|--------------|-----------|------|---------------|-----------|----------------------|-------------|----------|----------------|----------------|----------------|---|
| | | | | | | | | 87.6- | - 13- - 14- | | | | | | SANDY SILT (ML): brown, very fine to fine grained sand, moist to wet, clayey. |
| | 6 | 3 | CMSS | | 0 | | | | - 15- - 16- | | | 30 | 40 | 30 | |
| × | 6 | 4 | | | | No | No | | - 17- - | | | 30 | 40 | 30 | |
| | | | | | | | | 82.6- | 18- - 19- - | | | | | | SILTY SAND (SM): brown, very fine to fine grained sand, minor clay, wet. |
| X | 6 6 | 3 3 4 | CMSS | | 0 | | • | 79.1- | 20- | | | 50 50 50 | 40 40 40 | 10 10 10 | |
| J5 | | | | | | | | | 22- | | | | | | TOTAL DEPTH = 21.5 FEET |
| IA ROSA.GDI 04/19/(| | | | | | | | | 24- - 25- | | | | | | |
| 312.00.GPJ SCS-SAN | | | | | | | | | 26- 26- | | | | | | |
| A KOSA BOKING LOG 07203372.00.GPJ SCS-SANTA KOSA.GDT 04/19/05 | S | C S | Е | N | GΙ | N I | E E | R S | 27- | BC | PRI | NC | 3 L | OŒ | 6 MW-07 |

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-07 2 of 2

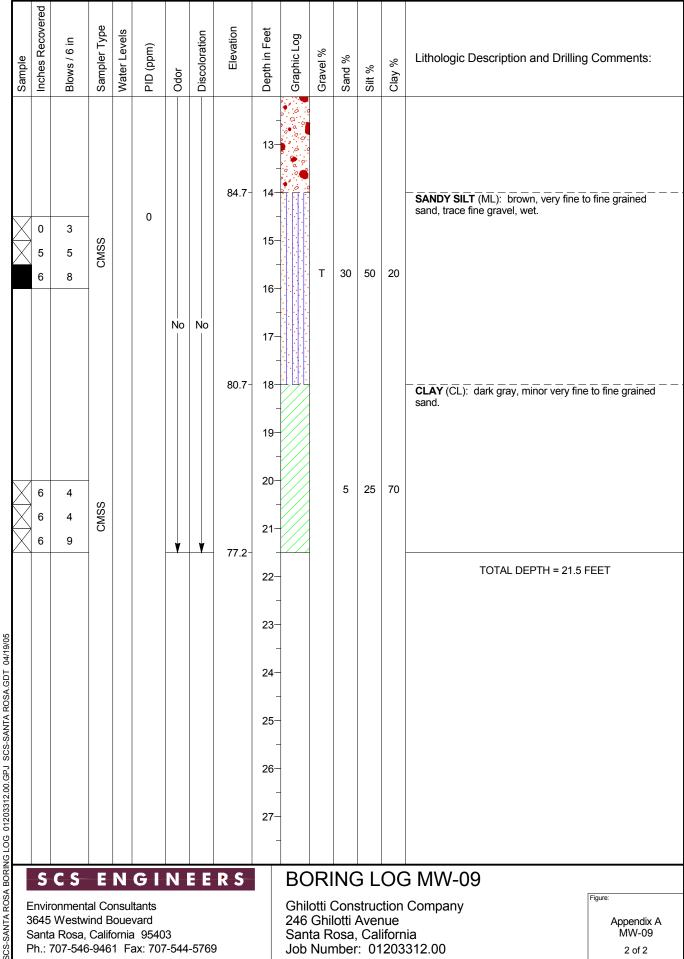
| Da | te (s | tart, er | nd): | 2/2 | 2/05 - 2 | 2/2/0 | 5 | | | Bor | ring I | No. | Bor | ing L | ocation: Ghilotti Avenue | |
|-------------|------------------|--------------------|--------------------|--------------|-----------|----------|---------------|---------------|---------------|-------------|----------|---------|---------------|---------------|---|--------------------|
| | • | Time (| , | | | | | 00 | | M۱ | W-(| 80 | | | | |
| | | d By: | Step | ohen | Knüt | tel | | | | | ' | | | | fied Soil Classification System (USC | S) |
| Ch | ecke | ed By: | | | | | | | | | | | for | Lege | nd and information not noted. | |
| | _ | Contra | | | | | rilling | ı, Inc. | | | | | M | W In | stalled: Y \boxtimes N \square if no, boring ba | ckfilled with: |
| | | Name | | | | | Λιια | | | | | | C | emer | nt 🗌 Bentonite: Cement 🗌 Gı | rout 🗌 Chips 🗆 |
| | | Metho ng Met | | | | Sterri | Aug | ЕІ | | | | | Αı | uger | Depth, ft: 20.5 Total Depth, | ft: 21.5 |
| | - | er weig | | | | s / 30 |) inch | 1 | | | | | | | | |
| | tes: | | | | | | | | | | | | | | | |
| | - | | | | <u> </u> | 1 | | | | T | | | | | | |
| | Inches Recovered | | a) | | | | | ا ر | | | | | | | | |
| | eco | . <u>⊑</u> | Sampler Type | Water Levels | ڪ | | Discoloration | Elevation | Depth in Feet | Log | | | | | | |
| ple | es R | 9 / g | pler | ır Le | udd) | | olora | Elev | ri Li | hic | el % | % | | % | Lithologic Description and Drilling | Comments: |
| Sample | nche | Blows / 6 | Sam | Nate | PID (ppm) | Odor | Disc | 00.7 |)ept | Graphic Log | Gravel % | Sand % | Silt % | Clay | | |
| , , | | | 0, | _ | | A | <u> </u> | 98.7 98.5- | | Ň | | 0, | 0, | | ASPHALT: over base rock. | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | 97.7- | 1- | | | | | | SANDY CLAY (CL): brown, fine to me | dium grained |
| | | | | | | | | | | | | | | | sand, moist. | didiri grained |
| | | | | | | | | | , | | | | | | | |
| | | | | | | | | | 2- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | 3- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | 4- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | _ | | | | | | | |
| \times | 6 | 5 | | | 0 | | | | 5- | | | 30 | 20 | 50 | | |
| | 6 | 9 | CMSS | | | | | | | | | 30 | 30 | 40 | | |
| \/ | | | S | | | No | No | 92.7- | 6- | | | 30 | 40 | 30 | SANDY SILT (ML): brown, very fine to | fine grained |
| \triangle | 6 | 11 | | | | | | | | | | | 10 | | sand, moist, clayey. | 3 |
| | | | | | | | | | 7- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | 8- | | | | | | | |
| | | | | | | | | 90.2- | | | | | | | SANDY CLAY (CL): brown, very fine to | o fine grained |
| | | | | | | | | | 9- | | | | | | sand, moist. | - |
| | | | | | | | | | | | | | | | | |
| | | | | | 0 | | | | 10 | | | | | | | |
| X | 6 | 5 | | | 0 | | | | 10- | | | 30 | 30 | 40 | | |
| | 6 | 5 | CMSS | Ā | | | | | - | | | 30 | 30 | 40 | Wet. | |
| \bigvee | | | S | | | | | 87.7- | 11- | | | 30 | 40 | 30 | SANDY SILT (ML): brown, very fine to | fine grained |
| \triangle | 6 | 6 | - | | | | | | | 4111 | | | | | sand, wet, clayey. | - |
| | | | | | | | | | <u> </u> | | | | | | | |
| | S | C S | E | N | GΙ | N | E E | R S | | BC | RI | NC | 3 L | OC | 9 MW-08 | |
| | | onment | | | | | | | _ | Ghil | otti (| Cons | struc | ction | Company | Figure: |
| ; | 3645 | Westw | ind E | Boue | vard | | | | | 246 | Ghi | lotti . | Avei | nue | | Appendix A |
| | | a Rosa, 707-546 | | | | | -5760 | a | | San | ta R | losa, | , Cal ~ ∩1 | I SUS | ia 312.00 | MW-08 1 of 2 |
| | 11 | . 01-040 | J- J- U | , i F | un. 10 | , -J44 | -0108 | , | | JUD | inuí | וואכו | . U | - LU J | 012.00 | 1 01 2 |



Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-08 2 of 2

| Da | te (s | start, er | nd): | 2/3 | 3/05 - 2 | 2/3/0 | 5 | | | Воі | ring I | No. | Bor | ng L | ocation: Ghilotti Avenue |
|---------------|------------------|-----------------|--------------|--------------|-----------|----------|---------------|-----------|---------------|-------------|----------|--------|--------|-------|---|
| | _ | Time (d By: | | | - | | - 15:0 | 00 | | M۱ | W-(|)9 | 0 | | 6-d 0-il 0 i6tion 0,t (11000) |
| - | | ed By: | Olop | JI ICI | ritiuu | lCi | | | | | | | | | fied Soil Classification System (USCS) and and information not noted. |
| | | Contra | | | | | Prilling | g, Inc. | | | | | М | W In | stalled: Y⊠ N□ if no, boring backfilled with: |
| | | Name Metho | | | | | ι Διια | er | | | | | C | emer | nt Bentonite: Cement Grout Chip |
| | | ng Met | | | | Oten | i Aug | CI | | | | | Αı | uger | Depth, ft: 20.5 Total Depth, ft: 21.5 |
| | mm tes: | er weig | jht / fa | all:_ | 140 lb | s / 30 | 0 inch | <u>1</u> | | | | | | | |
| | red | | | | | | | | | | | | | | |
| | Inches Recovered | .⊑ | Гуре | vels | | | tion | ation | -eet | go. | | | | | |
| ple | es Re | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | _ | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | % p | % | % | Lithologic Description and Drilling Comments: |
| Sample | Inch | Blow | Sam | Wat | PID | Odor | Disc | 98.7 | Dep | Grap | Gra | Sand % | Silt % | Clay | |
| | | | | | | A | A | 98.5- | | | | | | | ASPHALT: over base rock. |
| | | | | | | | | 97.7- | 1- | | | | | | SANDY CLAY (CL): brown, very fine to fine grained sand, moist. |
| | | | | | | | | | 2- | | | | | | |
| | | | | | | | | | 3- | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | 94.7- | 4- | | | | | | GRAVEL with Silt and Sand (GW-GM): brown tp yellowish brown, fine and coarse gravel, fine to coarse |
| | | | | | 0 | | | | 5- | | | | | | grained sand, moist. |
| X | 6 | 9 | က္ခ | | | | | | | | 40 | 30 | 20 | 10 | |
| | 6 | 18 | CMSS | | | No | No | | 6- | | 40 | 30 | 20 | 10 | |
| <u>X</u> | 6 | 28 | - | | | | | | | | 40 | 30 | 20 | 10 | |
| | | | | | | | | | 7- | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | 8- | | | | | | |
| | | | | | | | | 90.2- | | | | | | | SAND with Gravel (SW): brown, fine to coarse graine |
| | | | | | | | | | 9- | a . | | | | | sand and fine and coarse gravel, minor silt, wet. |
| | | | | | | | | | | 000 | | | | | |
| $\overline{}$ | 0 | 19 | | Ā | 0 | | | | 10- | 0.0 | | | | | |
| \bigcirc | 2 | 19 | CMSS | | | | | | | 0.0 | | | | | Wet. |
| $/ \setminus$ | 6 | 6 | S | | | | | | 11- | 0 0 0 | 30 | 50 | 15 | 5 | |
| | | | | | | | | | | 0.0 | | | | | |
| | S | C S | E | N | GΙ | N | ΕE | R S | | BC | RI | NC | G L | OC | 6 MW-09 |
| | | onmen | | | | | | | | Ghil | lotti (| Cons | struc | tion | Company Figure: |
| | | Westwa Rosa, | | | | 03 | | | | 246 San | ıta R | osa, | , Cal | iforn | |
| F | Ph.: ' | 707-546 | 6-946 | 1 F | ax: 70 | 7-544 | 1-576 | 9 | | | | | | | 312.00 1 of 2 |



Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-09 2 of 2

| Da | ite (s | tart, er | nd): | 2/3 | 3/05 - 2 | 2/3/0 | 5 | | | Boı | ing I | No. | Bor | ing L | ocation: Ghilotti Avenue | |
|-----------------------------|------------------|-------------------|---|--------------|-----------|--------|---------------|-----------|---------------|-------------|----------|--------|----------------|---------------------|---|---|
| | | Time (| | | | | | 15 | | M۱ | W-' | 10 | | | | |
| | | d By: | Step | ohen | ı Knüt | tel | | | | | • | . • | | | ried Soil Classification System (USCS) | |
| Cr | necke | ed By: | | | | | | | | | | | for | Lege | nd and information not noted. | |
| Dr | illing | Contra | actor: | Cle | ear He | art D | rilling | g, Inc. | | | | | М | W In | stalled: $Y \boxtimes N \square$ if no, boring backfilled with: | |
| | | Name | | | | | | | | | | | С | emer | ıt ☐ Bentonite: Cement ☐ Grout ☐ Chip | s |
| | | | | | | Stem | ı Aug | er | | | | | A | uger | Depth, ft: 21.5 Total Depth, ft: 21.5 | |
| | - | ng Met er weig | | | | s / 3(|) inch | <u> </u> | | | | | | 3 | | |
| | otes: | or worg | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | u | 1 10 10 | 0,70 | 0 11101 | • | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | ered | | | | | | | | | | | | | | | |
| | Inches Recovered | .⊑ | Sampler Type | els | _ | | Loi | tion | eet | g | | | | | | |
| ø | Re | / 6 i | er T | Water Levels | PID (ppm) | | Discoloration | Elevation | Depth in Feet | Graphic Log | % | % | | % | Lithologic Description and Drilling Comments: | |
| Sample | ches | Blows / 6 | ldmr | ater | <u>a</u> | Odor | scol | ш | epth | aph | Gravel % | Sand % | Silt % | Clay % | | |
| S | ŭ | ă | S | 3 | | ŏ | | 98.6 | ۵ | Ö | ō | S | i <u>s</u> | Ö | 1001111 | |
| | | | | | | 1 | 1 | 98.4- | | | ļ | | | | ASPHALT: over base rock. | |
| | | | | | | | | | | | • | | | | | |
| | | | | | | | | 97.6- | 1- | | | | | | SANDY CLAY (CL): dark brown, very fine to fine | |
| | | | | | | | | | | -/// | | | | | grained sand, trace fine gravel, moist. | |
| | | | | | | | | | 2- | 1/// | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | 3- | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | 94.6- | 4- | | | | | | GRAVEL with Silt and Sand (GW-GM): dark brown t | |
| | | | | | | | | | | | } | | | | dark gray, fine and coarse gravel, fine to coarse grained | ť |
| | | | | | | | | | _ | | | | | | sand, moist. | |
| \times | 0 | 15 | | | 0 | | | |) J | | | | | | | |
| $\overline{}$ | 0 | 17 | CMSS | | | | | | | | [| | | | | |
| | | | S | | | No | No | | 6- | | 40 | 30 | 20 | 10 | | |
| | 5 | 17 | _ | | | | | | | | 70 | | 20 | | | |
| | | | | | | | | | 7- | | ţ | | | | | |
| 3 | | | | | | | | | ' | | | | | | | |
| 2 | | | | | | | | | | | ţ | | | | | |
| 2 | | | | | | | | 90.6- | 8- | | | | | | SANDY SILT (ML): brown, very fine to fine grained | |
| JSA. | | | | | | | | | | - | | | | | sand, clayey. | |
| ¥ | | | | | | | | | 9- | | | | | | | |
| -SAIN | | | | | | | | | _ | | | | | | | |
| SCS-SANIA ROSA.GDI 04/19/05 | | | | | | | | | | | | | | | | |
| 01203312.00.GPJ | 6 | 5 | 1 | | 0 | | | | 10- | 1111 | | 30 | 40 | 30 | | |
| 32/ | | | SS | | | | | | | 1111 | | 30 | 40 | 30 | | |
| 2033 | 6 | 5 | CMSS | | | | | | 11- | 4111 | | | | | | |
| <u> </u> | 6 | 5 | | ∇ | | | | | | | | 30 | 40 | 30 | | |
| SCS-SANTA KOSA BOKING LOG | | | | | | | | | | | | | | | | |
| | S | C S | Е | N | G L | N | ΕF | R S | | BC |)RI | NC | - 1 | $\overline{\Omega}$ | 6 MW-10 | |
| 727 | | | | | | | | -R J | | | | | | | Figure: | |
| Ž | | onment Westw | | | | | | | | Ghil 246 | | | | | Company Appendix A | |
| NAO | Santa | a Rosa, | Calif | fornia | a 9540 | | | | | San | ta R | osa | , Ca | iforn | ia MW-10 | |
| 9 | Ph.: | 707-546 | 3-946 | 1 F | ax: 70 | 7-544 | 1-5769 | 9 | | Job | Nur | nbei | r: 01 | 203 | 312.00 1 of 2 | |

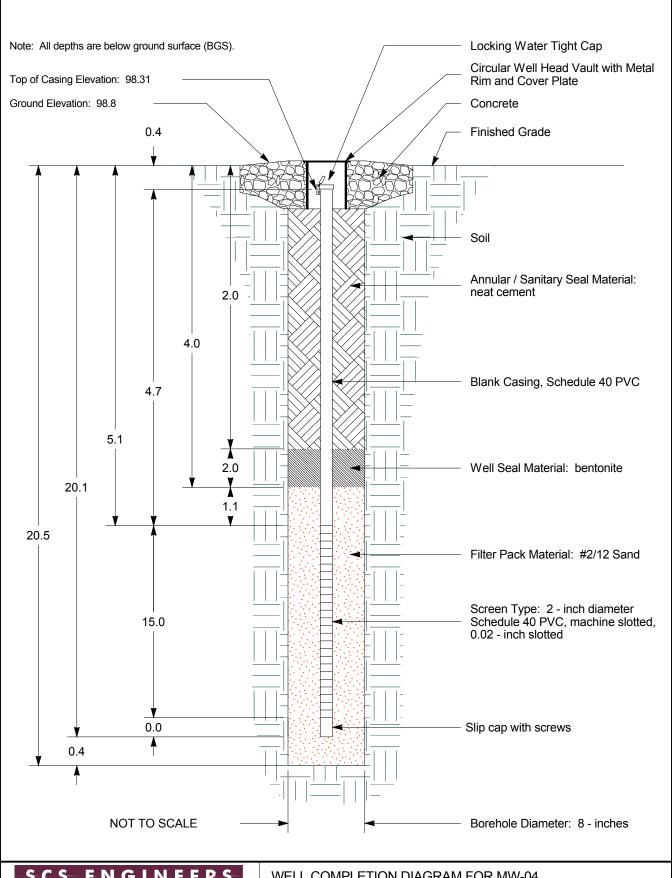
| Sample | Inches Recovered | Blows / 6 in | Sampler Type | Water Levels | PID (ppm) | Odor | Discoloration | Elevation | Depth in Feet | Graphic Log | Gravel % | Sand % | Silt % | Clay % | Lithologic Description and Drilling Comments: |
|--|------------------|--------------|--------------|--------------|-----------|---------------------------------------|---------------|-----------|-----------------------------|-------------|----------|----------------|----------------|----------------|---|
| | 6 | 2 | | | 0 | | | | - 13- - 14- | | | 30 | 40 | 30 | |
| | 6 | 3 | CMSS | | | No | No | | 15- - 16- - 17- | | | 30 | 40 40 | 30 | |
| | 6 | 3 4 | CMSS | | 0 | | | 80.6- | 18- 19- 20- 21- | | | 30 30 30 | 30 30 30 | 40 40 40 | SANDY CLAY (CL): dark brown, very fine to fine grained sand, wet. Dark gray. |
| S-SANTA ROSA.GDT 04/19/05 | 6 | 4 | | | | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | \ | 77.1- | 22- 23- 24- 25- | | | 33 | 30 | -TV | TOTAL DEPTH = 21.5 FEET |
| COSA BORNIG LOG 0120331200.GFJ SCS-SANIA ROSA.GDI 04/19/05 | | C S | | | | N | E E | R S | 26- - 27- - | | | | | | G MW-10 |

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Appendix A MW-10 2 of 2

APPENDIX B

WELL COMPLETION DIAGRAMS

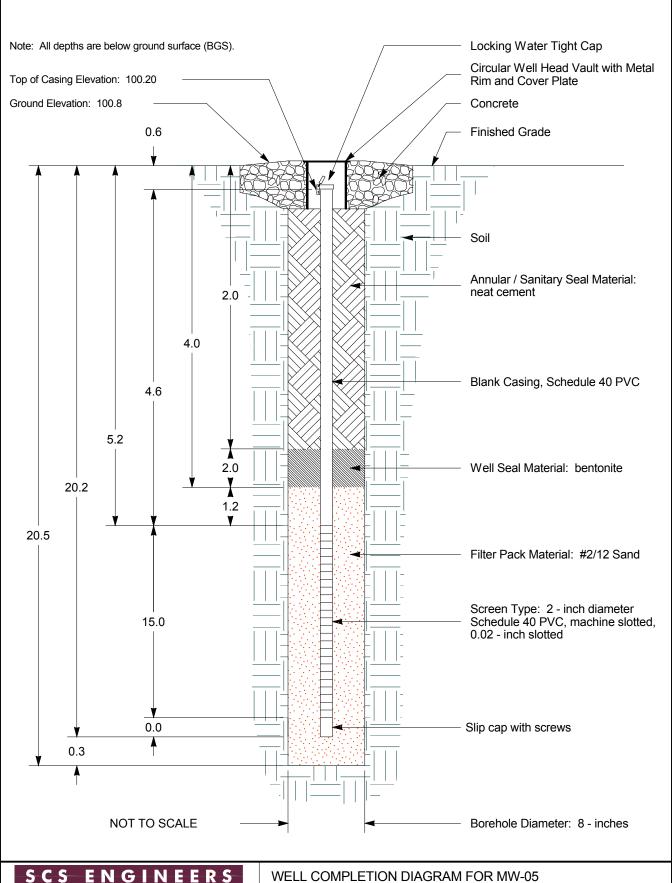


Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

WELL COMPLETION DIAGRAM FOR MW-04

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

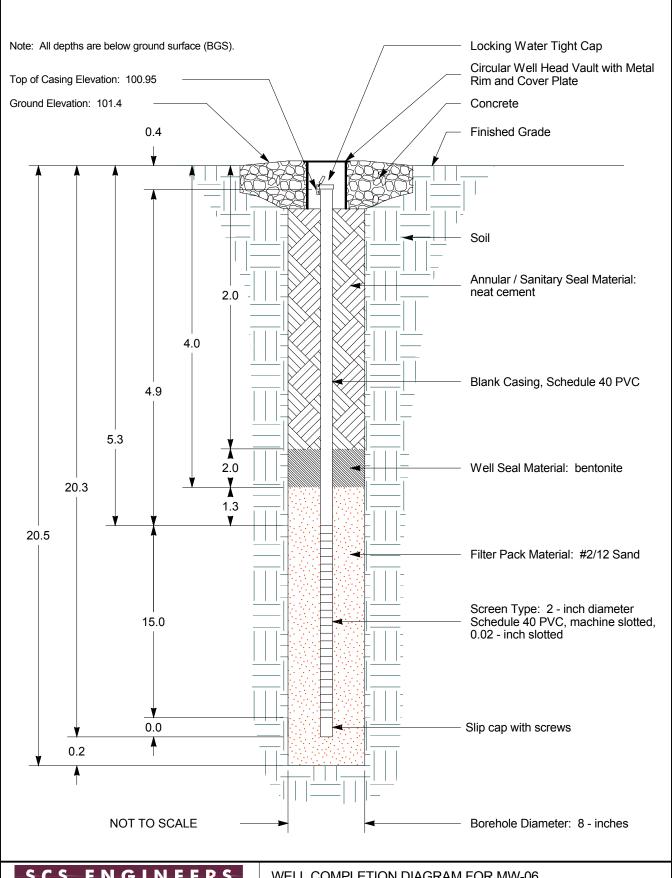
Figure:



Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Figure:

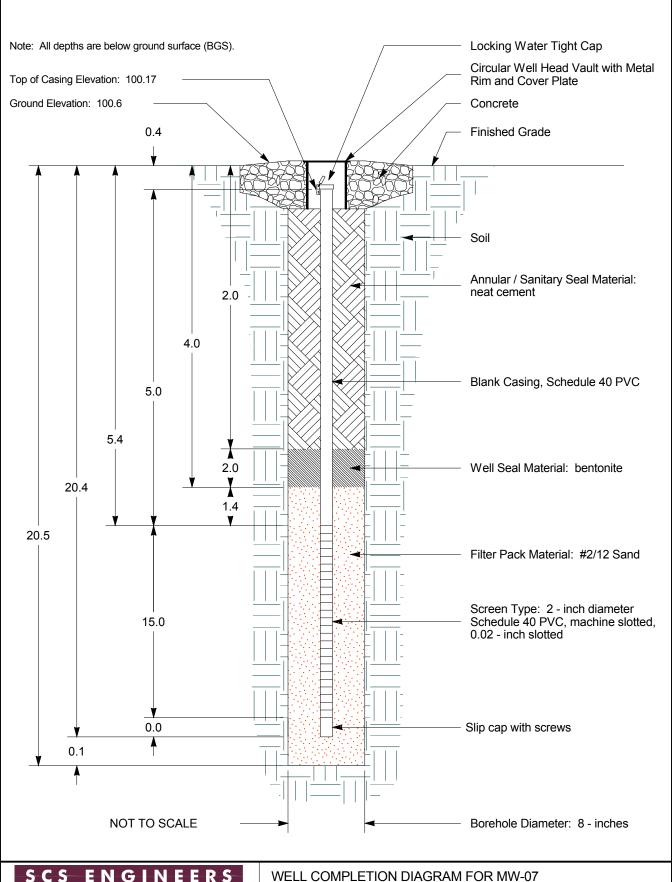


Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

WELL COMPLETION DIAGRAM FOR MW-06

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

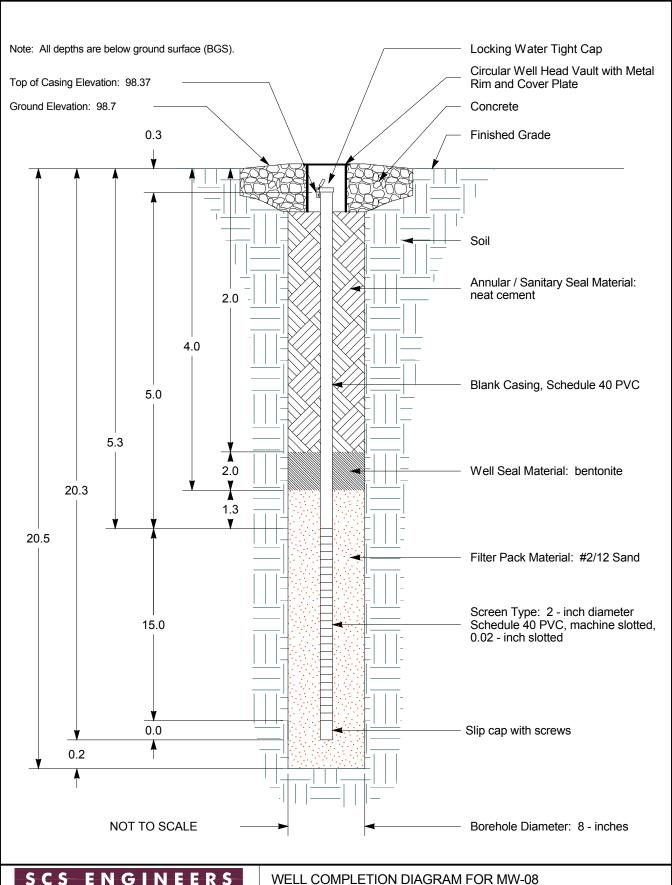
Figure:



Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

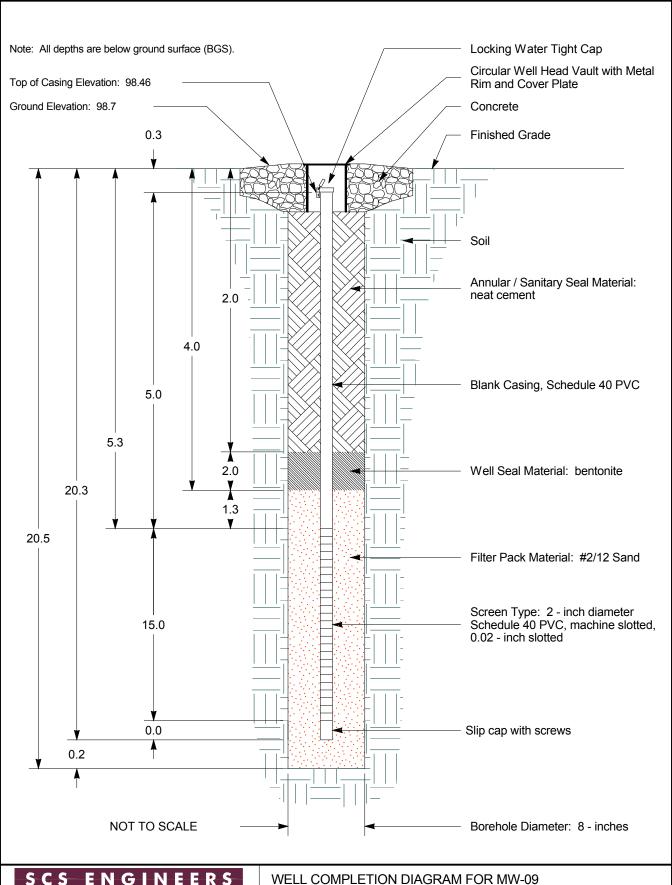
Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Figure:



Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769 **Ghilotti Construction Company** 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

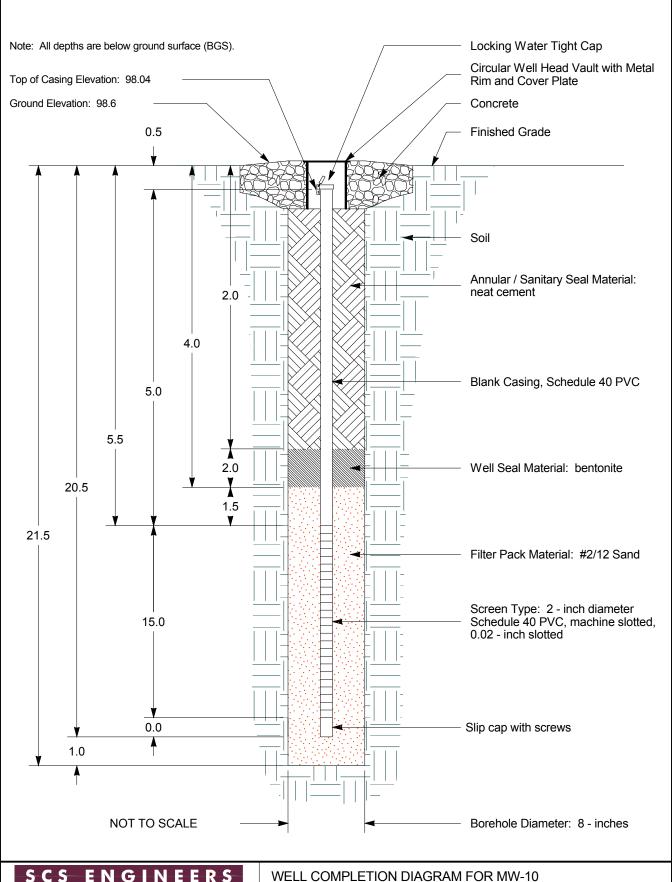
Figure:



Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Figure:



Environmental Consultants 3645 Westwind Boulevard Santa Rosa, California 95403 Ph.: 707-546-9461 Fax: 707-544-5769

Ghilotti Construction Company 246 Ghilotti Avenue Santa Rosa, California Job Number: 01203312.00

Figure:

APPENDIX C

WELL DEVELOPMENT RECORDS WELL PURGE RECORDS

| SCSE | NGINEE | DS | WELL DEVELO | OPMENT RECORD | WELL NUMBER |
|----------------------------|-----------------------|--------------------------|---------------------------|--------------------------------|----------------------------|
| JUJ L | NOINLL | K J | WALLE DEVEL | SPINIENT RECORD | MW-04 |
| PROJECT | | | JOB NUMBER | SITE | RECORDED BY |
| Ghile | otti Construction Cor | npany | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley |
| PROJECT LOCATION | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
| 246 Ghilott | ti Avenue Santa Rosa | ı, California | ~63 ° | Sunny | None |
| Λ | METHOD | DEVELOPMENT (| CRITERIA | | |
| HAND PUMP (HP) | | Minimum o stabilized. | of 4 well volumes or unti | l discharge is clear and water | characteristics have |
| SUBMERSIBLE PUMP (SP) — | X | * Oil/water | r interface probe used to | check for NAPLs; MLE = N | leter Limit Exceeded, i.e. |
| BAILER (B) | | >999 NTU | | | , |
| SURGE BLOCK (SB) | X | | | | |
| | | | 1 | PURGE VOLUME CALCULAT | ION |

 d_H

HOLE DIAMETER GROUND SURFACE (S) WELL CASING INSIDE DIAM $d_wID =$ 2.0 **OUTSIDE DIAM** $d_wOD =$ DEPTH TO: 3.81 WATER LEVEL TD_{S} BASE OF SEAL S 4.0 TD_{C} BASE OF SCREEN 20.1 TD_s BASE OF SUMP 20.1 ESTIMATED FILTER 0.25

PACK POROSITY

Diameters in (inches) : Depths in (feet)

CASING VOLUME =

$$V_{c} = \pi \left(\frac{d_{W}ID}{2}\right)^{2} (TD_{c} - H) = 3.14 \left(\frac{0.17}{2}\right)^{2} (20.1 - 4.3)$$
$$= 0.35 \text{ ft}^{3}$$

FILTER PACK PORE VOLUME =

$$V_F = \pi \left[\left(\frac{d_H}{2} \right)^2 - \left(\frac{d_WOD}{2} \right)^2 \right] (TD_s - (S \text{ or H})^*)(P)$$

= 1.25 ft ³

TOTAL WELL VOLUME =

$$V_T = V_C + V_F = 1.59 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 11.9 \text{ gal}$$

(* If S > H, use S; If S < H, use H)

| | | DEVELOPMENT LOG CUMULATIVE TOTAL REMOVE | | | | | | | WATER | CHARACT | ERISTICS | | COMMENTS |
|-----------------------------------|----------|---|--------------|--------|---------------------------|-----|-----------------|------|-------------------------|--------------------|------------------|------------------------------|-------------|
| | DATE | TIN BEGIN | ME FINISH | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pН | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| | 02/02/05 | 01:30 | 01:31 | SP | 1 | 1 | 0.08 | 7 | 2.42 | 616 | 20.9 | 7.53 | |
| | 02/02/05 | 01:31 | 01:33 | SP | 2 | 3 | 0.25 | 6.85 | 1.71 | *MLE | 21.1 | 6.31 | |
| | 02/02/05 | 01:33 | 01:35 | SP | 2 | 5 | 0.42 | 6.75 | 1.52 | *MLE | 21 | 4.71 | |
| | 02/02/05 | 01:35 | 01:38 | SP | 3 | 8 | 0.67 | 6.78 | 1.41 | *MLE | 21.1 | 3.88 | |
| | 02/02/05 | 01:40 | 01:50 | SB | 0 | 8 | 0.67 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| | 02/02/05 | 01:52 | 01:57 | SP | 5 | 13 | 1.09 | 6.78 | 2.06 | 500 | 19.5 | 4.39 | |
| | 02/02/05 | 01:57 | 02:03 | SP | 5 | 18 | 1.51 | 6.73 | 1.64 | *MLE | 20.3 | 2.57 | |
| | 02/02/05 | 02:03 | 02:13 | SP | 10 | 28 | 2.35 | 6.64 | 1.4 | *MLE | 20.8 | 2.28 | |
| | 02/02/05 | 02:13 | 02:23 | SP | 10 | 38 | 3.19 | 6.6 | 1.33 | *MLE | 20.6 | 5.09 | |
| 905 | 02/02/05 | 02:23 | 02:33 | SP | 10 | 48 | 4.03 | 6.63 | 1.28 | 759 | 20.6 | 5.15 | |
| 4/19/2005 | 02/02/05 | 02:33 | 02:38 | SP | 5 | 53 | 4.45 | 6.68 | 1.28 | 466 | 20.9 | 3.86 | |
| ate: 4 | 02/02/05 | 02:38 | 02:42 | SP | 5 | 58 | 4.86 | 6.7 | 1.28 | 289 | 20.8 | 5.66 | |
| Project ID: 01203312.00.GPJ Date: | 02/02/05 | 02:42 | 02:47 | SP | 5 | 63 | 5.28 | 6.7 | 1.26 | 255 | 20.9 | 4.11 | |
| 2.00.0 | | | | | | | | | | | | | |
| 20331 | | | | | | | | | | | | | |
| D: 01 | | | | | | | | | | | | | |
| oject I | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| IENT | | | | | | | | | | | | | |
| LOPN | | | | | | | | | | | | | |
| EVE | | | | | | | | | | | | | |
| ELL I | | | | | | | | | | | | | |
| m: W | | | | | | | | | | | | | |
| Report Form: WELL DEVELOPMENT 2 | | | | | | | | | | | | | |
| Repo | | | | | | | | | | | | | |

| | | | | | WELL NUMBER |
|--|---------------------------|---|--------------------------|--------------------------------|----------------------------|
| SCSE | NGINEER | S | WELL DEVELO | PMENT RECORD | MW-05 |
| PROJECT | | | JOB NUMBER | SITE | RECORDED BY |
| Gh | ilotti Construction Compa | ıny | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley |
| PROJECT LOCATION | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
| 246 Ghile | otti Avenue Santa Rosa, C | alifornia | ~63 ° | Sunny | None |
| | METHOD | DEVELOPMENT CR - Minimum of stabilized. | | discharge is clear and water o | characteristics have |
| HAND PUMP (HP) SUBMERSIBLE PUMP (SP) | X | * Oil/water i | nterface probe used to c | check for NAPLs; MLE = M | leter Limit Exceeded, i.e. |
| BAILER (B) | | >999 NTU's) | | , | |
| SURGE BLOCK (SB) | X | - | | | |
| | | | F | PURGE VOLUME CALCULATI | ON |

HOLE DIAMETER $d_H = 8.0$

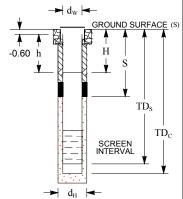
WELL CASING

DEPTH TO:

WATER LEVEL h = 5.48
BASE OF SEAL S = 4.0
BASE OF SCREEN TD_S = 20.2
BASE OF SUMP TD_C = 20.2

ESTIMATED FILTER P = 0.25 PACK POROSITY

Diameters in (inches) : Depths in (feet)



CASING VOLUME =

$$V_{c} = \pi \left(\frac{d_{W}ID}{2}\right)^{2} (TD_{c} - H) = 3.14 \left(\frac{0.17}{2}\right)^{2} (20.2 - 6.1)$$
$$= 0.31 \text{ ft}^{3}$$

FILTER PACK PORE VOLUME =

$$V_{F} = \pi \left[\left(\frac{d_{H}}{2} \right)^{2} - \left(\frac{d_{W}OD}{2} \right)^{2} \right] (TD_{s} - (S \text{ or H})^{*})(P)$$
= 1.11 ft ³

TOTAL WELL VOLUME =

$$V_T = V_C + V_F = 1.42 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 10.6 \text{ gal}$$

(* If S > H, use S; If S < H, use H)

| | | DEVE | LOPMEN | NT LOG | | | LATIVE REMOVED | | WATER | CHARACT | ERISTICS | | COMMENTS |
|---|----------|-------|--------|--------|------------------|----------|-------------------|------|--------------|-----------|-------------|---------------------|-------------|
| | DATE | TIM | ИΕ | METHOD | WATER REMOVED | GAL | WELL | pН | CONDUCTIVITY | TURBIDITY | TEMPERATURE | DISSOLVED OXYGEN | |
| l | 5,112 | BEGIN | FINISH | | (GAL) | - O/ 1.E | VOLUMES | ρ | (mmhos/cm) | (NTU) | (°C) | (ppm) | |
| L | 02/02/05 | 01:40 | 01:41 | SP | 1 | 1 | 0.09 | 6.89 | 1.34 | 898 | 18.9 | 5.71 | |
| | 02/02/05 | 01:41 | 01:43 | SP | 2 | 3 | 0.28 | 6.75 | 1.22 | 630 | 18.3 | 6.44 | |
| | 02/02/05 | 01:43 | 01:45 | SP | 2 | 5 | 0.47 | 6.63 | 1.19 | *MLE | 18.4 | 5.98 | |
| | 02/02/05 | 01:45 | 01:47 | SP | 2 | 7 | 0.66 | 6.57 | 0.938 | *MLE | 18.5 | 3.91 | |
| | 02/02/05 | 01:50 | 02:00 | SB | 0 | 7 | 0.66 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| | 02/02/05 | 02:50 | 02:55 | SP | 5 | 12 | 1.13 | 6.84 | 1.22 | 586 | 18 | 5.04 | |
| | 02/02/05 | 02:55 | 03:00 | SP | 5 | 17 | 1.60 | 6.62 | 0.826 | *MLE | 18.3 | 5.16 | |
| | 02/02/05 | 03:00 | 03:10 | SP | 10 | 27 | 2.54 | 6.58 | 0.742 | *MLE | 18.3 | 4.98 | |
| | 02/02/05 | 03:10 | 03:20 | SP | 10 | 37 | 3.48 | 6.55 | 0.71 | 793 | 18.2 | 6.11 | |
| 3 | 02/02/05 | 03:20 | 03:25 | SP | 5 | 42 | 3.95 | 6.52 | 0.711 | 523 | 18.2 | 5.11 | |
| 12/20 | 02/02/05 | 03:25 | 03:30 | SP | 5 | 47 | 4.43 | 6.55 | 0.704 | 444 | 18.2 | 4.62 | |
| Date: 4/19/2003 | 02/02/05 | 03:30 | 03:40 | SP | 10 | 57 | 5.37 | 6.53 | 0.679 | 307 | 18.1 | 6.27 | |
| r. U | 02/02/05 | 03:40 | 03:45 | SP | 5 | 62 | 5.84 | 6.52 | 0.687 | 264 | 18.2 | 4.56 | |
| Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GFJ | 02/02/05 | 03:45 | 03:50 | SP | 5 | 67 | 6.31 | 6.51 | 0.687 | 254 | 18.2 | 4.54 | |
| 71000 | | | | | | | | | | | | | |
| 7.017 | | | | | | | | | | | | | |
| 1206 | | | | | | | | | | | | | |
| 71. | | | | | | | | | | | | | |
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Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

| SCSF | NGINEE | RS | WELL DEVELO | OPMENT RECORD | WELL NUMBER |
|--|-------------------------|---------------------|-------------------------------|--------------------------------|----------------------------|
| | | IX 5 | | | MW-06 |
| PROJECT | | | JOB NUMBER | SITE | RECORDED BY |
| Gh | ilotti Construction Con | ıpany | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley |
| PROJECT LOCATION | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
| 246 Ghil | otti Avenue Santa Rosa | , California | ~63 ° | Sunny | None |
| | METHOD | DEVELOPMENT | CRITERIA | | <u>'</u> |
| HAND DUMP (UP) | | Minimum stabilized. | of 4 well volumes or unti | l discharge is clear and water | characteristics have |
| HAND PUMP (HP) SUBMERSIBLE PUMP (SP) | X | REMARKS | er interface probe used to | o check for NAPLs; MLE = N | Joton Limit Evapodod i a |
| BAILER (B) | | — >999 NTU | | check for NAI Es, WILE - W | ictei Ellint Exceeded, i.e |
| SURGE BLOCK (SB) | X | | | | |
| | | | | PURGE VOLUME CALCULAT | ION |
| HOLE DIVMETE | ED 4 - 9 | | d _w ◀ | | |

HOLE DIAMETER $d_H = 8.0$

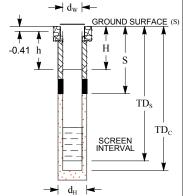
WELL CASING

DEPTH TO:

WATER LEVEL h = 6.18
BASE OF SEAL S = 4.0
BASE OF SCREEN TD_S = 20.3
BASE OF SUMP TD_C = 20.3

ESTIMATED FILTER P = 0.25 PACK POROSITY

Diameters in (inches) : Depths in (feet)



CASING VOLUME =

$$V_{c} = \pi \left(\frac{d_{W}ID}{2}\right)^{2} (TD_{c} - H) = 3.14 \left(\frac{0.17}{2}\right)^{2} (20.3 - 6.6)$$
$$= 0.30 \text{ ft}^{3}$$

FILTER PACK PORE VOLUME =

$$V_{F} = \pi \left[\left(\frac{d_{H}}{2} \right)^{2} - \left(\frac{d_{W}OD}{2} \right)^{2} \right] (TD_{s} - (S \text{ or H})^{*})(P)$$
= 1.08 ft ³

TOTAL WELL VOLUME =

$$V_T = V_C + V_F = 1.38 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 10.3 \text{ gal}$$

(* If S > H, use S; If S < H, use H)

| | | DEVE | LOPMEN | NT LOG | | | LATIVE REMOVED | | WATER | CHARACT | ERISTICS | | COMMENTS |
|--|----------|-------|--------|--------|------------------|------|-------------------|------|--------------|-----------|-------------|---------------------|-------------|
| | DATE - | TIM | ИE | METHOD | WATER REMOVED | GAL | WELL | pН | CONDUCTIVITY | TURBIDITY | TEMPERATURE | DISSOLVED OXYGEN | |
| L | 5,112 | BEGIN | FINISH | | (GAL) | 5,12 | VOLUMES | ρ | (mmhos/cm) | (NTU) | (°C) | (ppm) | |
| | 02/03/05 | 10:25 | 10:26 | SP | 1 | 1 | 0.10 | 7.06 | 1.66 | 846 | 17.4 | 6.84 | |
| | 02/03/05 | 10:26 | 10:28 | SP | 2 | 3 | 0.29 | 6.69 | 1.28 | *MLE | 17.5 | 7.01 | |
| | 02/03/05 | 10:28 | 10:30 | SP | 2 | 5 | 0.48 | 6.53 | 1.12 | *MLE | 17.6 | 6.14 | |
| | 02/03/05 | 10:30 | 10:40 | SB | 0 | 5 | 0.48 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| | 02/03/05 | 10:47 | 10:52 | SP | 5 | 10 | 0.97 | 6.56 | 1.07 | 978 | 18.1 | 2.88 | |
| | 02/03/05 | 10:52 | 11:02 | SP | 10 | 20 | 1.94 | 6.54 | 0.777 | *MLE | 18.1 | 3.51 | |
| ſ | 02/03/05 | 11:02 | 11:12 | SP | 10 | 30 | 2.91 | 6.39 | 0.756 | 739 | 18.3 | 4.68 | |
| I | 02/03/05 | 11:12 | 11:22 | SP | 10 | 40 | 3.88 | 6.43 | 0.74 | 291 | 18.2 | 4.35 | |
| I | 02/03/05 | 11:22 | 11:27 | SP | 5 | 45 | 4.36 | 6.41 | 0.731 | 209 | 18.3 | 3.69 | |
| c I | 02/03/05 | 11:27 | 11:33 | SP | 5 | 50 | 4.85 | 6.45 | 0.726 | 160 | 18.3 | 3.63 | |
| 19/20 | 02/03/05 | 11:33 | 11:38 | SP | 5 | 55 | 5.33 | 6.42 | 0.725 | 119 | 18.3 | 3.55 | |
| ite: 4/ | | | | | | | | | | | | | |
| 7. U | | | | | | | | | | | | | |
| 5.00.5 | | | | | | | | | | | | | |
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| Nepoli rollii. Well develorivent z riojeci id. 01203312.00.0r3 date. 4/19/2003 | | | | | | | | | | | | | |
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Report Form: WELL DEVELOPMENT 2 Project ID: 01203312.00.GPJ Date: 4/19/2005

| CCCE | NGINEE | D.C. | WELL DEVEL | OPMENT RECORD | WELL NUMBER |
|--------------------------|------------------------|---------------------|----------------------------|--------------------------------|----------------------------|
| 3 | INGINEE | K 9 | WELL DEVEL | OPINIENT RECORD | MW-07 |
| PROJECT | | | JOB NUMBER | SITE | RECORDED BY |
| Gh | ilotti Construction Co | mpany | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley |
| PROJECT LOCATION | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
| 246 Ghile | otti Avenue Santa Ros | a, California | ~63 ° | Sunny | None |
| | METHOD | DEVELOPMENT | CRITERIA | | |
| HAND PUMP (HP) | | Minimum stabilized. | | l discharge is clear and water | characteristics have |
| SUBMERSIBLE PUMP (SP) | X | * Oil/wate | er interface probe used to | o check for NAPLs; MLE = M | leter Limit Exceeded, i.e. |
| BAILER (B) | | >999 NTU | | | , |
| SURGE BLOCK (SB) | X | | | | |
| | | | - 1 | PURGE VOLUME CALCULAT | ON |
| HOLE DIAMETE | $R d_{ij} = 8$ | 3.0 → | d _W ◀ | CASING VOLUME - | |

GROUND SURFACE (S) WELL CASING INSIDE DIAM Η $d_wID =$ -0.38 h 2.0 **OUTSIDE DIAM** $d_wOD =$ 2.5 DEPTH TO: 5.54 WATER LEVEL TD_{S} BASE OF SEAL S 4.0 TD_{C} BASE OF SCREEN TD_{s} 20.4 BASE OF SUMP 20.4

0.25

 $d_{\scriptscriptstyle H}$

ESTIMATED FILTER

Diameters in (inches) : Depths in (feet)

PACK POROSITY

CASING VOLUME = $V_C = \pi \left(\frac{d_W ID}{2}\right)^2 (TD_C - H) = 3.14 \left(\frac{0.17}{2}\right)^2 (20.4 - 5.9)$ = **0.32 ft**³

FILTER PACK PORE VOLUME =

$$V_{F} = \pi \left[\left(\frac{d_{H}}{2} \right)^{2} - \left(\frac{d_{W}OD}{2} \right)^{2} \right] (TD_{s} - (S \text{ or H})^{*})(P)$$

$$= 1.14 \text{ ft}^{3}$$

TOTAL WELL VOLUME =

 $V_T = V_C + V_F = 1.46 \text{ ft}^3 \text{ x } 7.48 \text{ gal/ft}^3 = 10.9 \text{ gal}$

(* If S > H, use S; If S < H, use H)

| | DEVE | LOPME | NT LOG | | | JLATIVE REMOVED | | WATER | CHARACT | ERISTICS | | COMMENTS |
|----------|-------|--------|----------|---------------------------|-----|--------------------|------|-------------------------|--------------------|------------------|------------------------------|-------------|
| DATE | BEGIN | FINISH | - METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pН | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 02/03/05 | 10:38 | 10:39 | SP | 1 | 1 | 0.09 | 6.85 | 2.47 | 967 | 19.2 | 6.85 | |
| 02/03/05 | 10:39 | 10:43 | SP | 3 | 4 | 0.37 | 6.84 | 2.14 | *MLE | 19.3 | 7.84 | |
| 02/03/05 | 10:43 | 10:46 | SP | 3 | 7 | 0.64 | 6.78 | 1.92 | *MLE | 19.6 | 4.39 | |
| 02/03/05 | 11:30 | 11:40 | SB | 0 | 7 | 0.64 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/03/05 | 11:42 | 12:02 | SP | 20 | 27 | 2.48 | 6.85 | 1.48 | *MLE | 20.2 | 2.65 | |
| 02/03/05 | 12:02 | 12:12 | SP | 10 | 37 | 3.40 | 6.84 | 1.59 | *MLE | 20 | 2.95 | |
| 02/03/05 | 12:12 | 12:22 | SP | 10 | 47 | 4.32 | 6.78 | 1.56 | *MLE | 20.2 | 3.67 | |
| 02/03/05 | 12:22 | 12:32 | SP | 10 | 57 | 5.23 | 6.82 | 1.51 | *MLE | 20.2 | 4.29 | |
| 02/03/05 | 12:32 | 12:37 | SP | 5 | 62 | 5.69 | 6.79 | 1.49 | 395 | 20.2 | 4.5 | |
| 02/03/05 | 12:37 | 12:43 | SP | 5 | 67 | 6.15 | 6.77 | 1.49 | 269 | 20.2 | 2.6 | |
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| SCS EN | GIN | E | E R | S | WELL DEVEL | OPMENT RECORD | WELL NUMBER MW-08 |
|--|--|-------|------------|------------------|--------------------|--|--|
| PROJECT | | | | | JOB NUMBER | SITE | RECORDED BY |
| Ghilotti | Construct | ion (| Compa | ny | 01203312.00 | 246 Ghilotti Avenue | Jason Greenlee |
| PROJECT LOCATION | | | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR |
| 246 Ghilotti A | venue San | ta R | losa, C | alifornia | ~63 ° | Sunny | None |
| HAND PUMP (HP) SUBMERSIBLE PUMP (SP) BAILER (B) | X | | | * Oil/water i | | o check for NAPLs; MLE = M | leter Limit Exceeded, i.e. |
| SURGE BLOCK (SB) | Α | | | - | | PURGE VOLUME CALCULATI | ON |
| HOLE DIAMETER | d_{H} | = | 8.0 | → d _w | GROUND SURFACE (S) | CASING VOLUME = | |
| WELL CASING INSIDE DIAM OUTSIDE DIAM | d _w ID d _w OD | | 2.0 2.5 | -0.29 h | H | $V_{c} = \pi \left(\frac{d_{W}ID}{2}\right)^{2} (TD_{c} - H) =$ = 0.37 ft ³ | $3.14 \left(\frac{0.17}{2}\right)^2 $ (20.3 - 3.5 |
| DEPTH TO: | h | | | | | FILTER PACK PORE VOLUME | |

WATER LEVEL 3.25 S BASE OF SEAL = 4.0 BASE OF SCREEN $\,^{}$ TD_s \dot{TD}_{C} 20.3 SCREEN INTERVAL BASE OF SUMP 20.3 ESTIMATED FILTER PACK POROSITY = 0.25 d_H Diameters in (inches) : Depths in (feet)

 $V_F = \pi \left[\left(\frac{G_H}{2} \right) - \left(\frac{G_WOD}{2} \right) \right] (TD_s - (S \text{ or H})^*)(P)$ = 1.28 ft³

TOTAL WELL VOLUME =

 $V_T = V_C + V_F = 1.65 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 12.3 \text{ gal}$

(* If S > H, use S; If S < H, use H)

| | DEVE | LOPMEN | NT LOG | | CUMULATIVE TOTAL REMOVED | | | WATER | | COMMENTS | | |
|--------------------------|-------|--------|--------|---------------------------|-----------------------------|-----------------|------|-------------------------|--------------------|------------------|------------------------------|-------------|
| DATE | TIN | | METHOD | WATER REMOVED (GAL) | GAL | WELL VOLUMES | pН | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| | BEGIN | FINISH | | , , | | | | | | | | |
| 02/03/05 | 02:19 | 02:27 | SP | 8 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | |
| 02/03/05 | 02:35 | 02:45 | SB | 0 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| 02/03/05 | 02:45 | 02:50 | SP | 5 | 13 | 1.05 | 7.25 | 2.27 | *MLE | 18.6 | 2.75 | |
| 02/03/05 | 02:50 | 03:10 | SP | 20 | 33 | 2.68 | 6.81 | 1.66 | 669 | 18.6 | 3.36 | |
| 02/03/05 | 03:10 | 03:30 | SP | 20 | 53 | 4.30 | 6.86 | 1.58 | *MLE | 18.5 | 6.6 | |
| 02/03/05 | 03:30 | 03:54 | SP | 20 | 73 | 5.92 | 6.75 | 1.51 | *MLE | 18.3 | 6.35 | |
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| SCS EN | GINE | E R | S | WELL DEVE | LOPMENT RECORD | WELL NUMBER MW-09 | | | | | |
|--|----------------|---------|----------------------|--|---|-------------------|--|--|--|--|--|
| PROJECT | | | | JOB NUMBER | SITE | RECORDED BY | | | | | |
| Ghilotti C | Construction (| Compa | ny | 01203312.00 | 246 Ghilotti Avenue | Amy Yardley | | | | | |
| PROJECT LOCATION | | | | AIR TEMPERATURE | WEATHER | SUBCONTRACTOR | | | | | |
| 246 Ghilotti Av | enue Santa R | losa, C | alifornia | ~63 ° | Overcast | None | | | | | |
| HAND PUMP (HP) SUBMERSIBLE PUMP (SP) | X | | stabilized. REMARKS | Minimum of 4 well volumes or until discharge is clear and water characteristics have stabilized. | | | | | | | |
| BAILER (B) SURGE BLOCK (SB) | X | | >999 NTU's) | | to check for 1411 25, 1122 | Acceded, no. | | | | | |
| HOLE DIAMETER d _H = 8.0 | | | → d _w | GROUND SURFACE (S | PURGE VOLUME CALCULA' CASING VOLUME = | | | | | | |
| WELL CASING INSIDE DIAM OUTSIDE DIAM $d_w ID = 2.0$ $d_w OD = 2.5$ | | | -0.25 h | H | $= 3.14 \left(\frac{0.17}{2}\right)^2 (20.3 - 4.3)$ | | | | | | |
| DEDTH TO: | | | | | FILTER PACK PORE VOLUM | E = | | | | | |

WATER LEVEL 4.06 BASE OF SEAL S 4.0 TD_S BASE OF SCREEN 20.3 BASE OF SUMP 20.3 ESTIMATED FILTER 0.25 PACK POROSITY

Diameters in (inches) : Depths in (feet)

TD_s TD_{C} **→** d_H

 $V_{F} = \pi \left[\left(\frac{d_{H}}{2} \right)^{2} - \left(\frac{d_{W}OD}{2} \right)^{2} \right] (TD_{s} - (S \text{ or H})^{*})(P)$ $= 1.26 \text{ ft}^{3}$

TOTAL WELL VOLUME =

 $V_T = V_C + V_F = 1.61 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 12.0 \text{ gal}$

(* If S > H, use S; If S < H, use H)

| 02/0- 02/0- 02/0- 02/0- 02/0- 02/0- | BE B | 1:50 1 1:55 1 2:05 1 2:25 1 2:45 1 2:55 1 | | SP SB SP SP SP | WATER REMOVED (GAL) 7 0 20 20 | 7 7 27 | WELL VOLUMES 0.58 0.58 | pH n.a. n.a. | CONDUCTIVITY (mmhos/cm) n.a. n.a. | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN (ppm) | |
|--|--|--|---|----------------------------|-----------------------------------|--------------|--------------------------|--------------------|-------------------------------------|-----------------|------------------|------------------------------|-------------|
| 02/0- 02/0- 02/0- 02/0- 02/0- 02/0- | 14/05 11 14/05 11 14/05 12 14/05 12 14/05 12 14/05 12 14/05 13 | 1:50 1 1:55 1 2:05 1 2:25 1 2:45 1 2:55 1 | 11:55 12:05 12:25 12:45 12:55 | SB SP SP SP | 7 0 20 | 7 27 | 0.58 | | n.a. | n.a. | | , | |
| 02/0- 02/0- 02/0- 02/0- 02/0- 02/0- | 04/05 11 04/05 12 04/05 12 04/05 12 04/05 12 04/05 13 | 1:55 1 2:05 1 2:25 1 2:45 1 2:55 1 | 12:05 12:25 12:45 12:55 | SB SP SP SP | 0 20 | 7 27 | 0.58 | | | | n.a. | n.a. | |
| 02/0- 02/0- 02/0- 02/0- 02/0- | 04/05 12 04/05 12 04/05 12 04/05 12 04/05 13 | 2:05 1 2:25 1 2:45 1 2:55 1 | 12:25 12:45 12:55 | SP SP SP | 20 | 27 | | n.a. | n o | | | | |
| 02/0- 02/0- 02/0- 02/0- | 04/05 12 04/05 12 04/05 12 04/05 13 04/05 13 | 2:25 1 2:45 1 2:55 1 | 12:45 12:55 | SP SP | | | 224 | | II.a. | n.a. | n.a. | n.a. | Surged well |
| 02/0- 02/0- 02/0- | 04/05 12 04/05 12 04/05 13 04/05 13 | 2:45 1 2:55 1 | 12:55 | SP | 20 | | 2.24 | 6.94 | 1.45 | 551 | 17.4 | 7.85 | |
| 02/0 | 04/05 12 04/05 13 04/05 13 | 2:55 1 | | | | 47 | 3.91 | 6.86 | 0.889 | *MLE | 17.1 | 9.07 | |
| 02/0 | 04/05 13 04/05 13 | | 13:05 | | 10 | 57 | 4.74 | 6.83 | 0.833 | 622 | 16.9 | 9.8 | |
| | 04/05 13 | 3:05 1 | | SP | 10 | 67 | 5.57 | 6.69 | 0.837 | *MLE | 17 | 9.84 | |
| 02/0 | | | 13:10 | SP | 5 | 72 | 5.99 | 6.64 | 0.819 | *MLE | 17.3 | 9.78 | |
| | | 3:10 1 | 13:15 | SP | 5 | 77 | 6.40 | 6.59 | 0.815 | 570 | 17.3 | 9.08 | |
| 02/0 | 04/05 13 | 3:15 | 13:18 | SP | 3 | 80 | 6.65 | 6.58 | 0.817 | 427 | 17.3 | 9.91 | |
| S 02/0 | 04/05 13 | 3:18 1 | 13:20 | SP | 2 | 82 | 6.82 | 6.58 | 0.816 | 312 | 17.3 | 9.06 | |
| Project ID: 01203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | | | |
| ate: 4/ | | | | | | | | | | | | | |
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| Report Form: WELL DEVELOPMENT | | | | | | | | | | | | | |
| Repor | | | | | | | | | | | | | |

| S C S E N G | FIN | E | ΕR | S | WELL DE | EVEL | OPMENT RECORD | WELL NUMBER MW-10 |
|---|-----------------|------|-------------|--|--------------------------|-----------------|--|---|
| PROJECT | | | | | JOB NUMBER | | SITE | RECORDED BY |
| Ghilotti Co | nstructi | ion | Compa | ny | 012033 | 12.00 | 246 Ghilotti Avenue | Amy Yardley |
| PROJECT LOCATION | | | | | AIR TEMPERATU | JRE | WEATHER | SUBCONTRACTOR |
| 246 Ghilotti Ave | nue San | ta F | Rosa, C | alifornia | ~63 | 0 | Overcast | None |
| METHOL |) | | | DEVELOPMENT CR | | | | |
| HAND PUMP (HP) SUBMERSIBLE PUMP (SP) BAILER (B) | X | | | stabilized. REMARKS | nterface prob | | il discharge is clear and water o check for NAPLs; MLE = N | |
| SURGE BLOCK (SB) | 21 | | | - | | | DUDGE VOLUME ON OUR AT | ION |
| HOLE DIAMETER | d_{H} | = | 8.0 | → d _w | ← _ GROUND SUR | RFACE (S) | PURGE VOLUME CALCULAT CASING VOLUME = | |
| WELL CASING | | | | * * * * * * * * * * * * * * * * * * * | | A | $V_{c} = \pi \left(\frac{d_{W}ID}{2} \right)^{2} (TD_{c} - H) =$ | $= 3.14 \left(\frac{0.17}{2} \right)^2 (20.5 - 4.2)$ |
| INSIDE DIAM | d_wID | = | 2.0 | -0.51 h | Н | | \ | (2) |
| OUTSIDE DIAM | d_wOD | = | 2.5 | <u>*</u> | | | = 0.36 ft ³ | |
| DEPTH TO: WATER LEVEL BASE OF SEAL | h S | = | 3.67 4.0 | | TI | D_{s} | FILTER PACK PORE VOLUME $V_F = \pi \left[\left(\frac{d_H}{2} \right)^2 - \left(\frac{d_WOD}{2} \right)^2 \right]$ | |
| BASE OF SCREEN | TD _s | = | 20.5 | | SCREEN | TD _c | = 1.29 ft ³ | |

BASE OF SUMP ESTIMATED FILTER PACK POROSITY 0.25 Diameters in (inches) : Depths in (feet)

→ d_H

TOTAL WELL VOLUME =

 $V_T = V_C + V_F = 1.64 \text{ ft}^3 \text{ x 7.48 gal/ft}^3 = 12.3 \text{ gal}$

(* If S > H, use S; If S < H, use H)

| | | DEVE | LOPMEN | NT LOG | | CUMULATIVE TOTAL REMOVED | | | WATER | CHARACT | ERISTICS | | COMMENTS |
|---|----------|-------|--------|--------|------------------|-----------------------------|-----------------|------|-------------------------|--------------------|------------------|---------------------|-------------|
| | DATE | TII | МЕ | METHOD | WATER REMOVED | GAL | WELL VOLUMES | pН | CONDUCTIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPERATURE (°C) | DISSOLVED OXYGEN | |
| | | BEGIN | FINISH | | (GAL) | | VOLUMLS | | (IIIIIIIO5/CIII) | (1410) | (0) | (ppm) | |
| | 02/04/05 | 10:00 | 10:08 | SP | 8 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | |
| | 02/04/05 | 10:10 | 10:20 | SB | 0 | 8 | 0.65 | n.a. | n.a. | n.a. | n.a. | n.a. | Surged well |
| | 02/04/05 | 10:20 | 10:40 | SP | 20 | 28 | 2.28 | 7.11 | 1.58 | 498 | 18.4 | 7.37 | |
| | 02/04/05 | 10:40 | 10:50 | SP | 10 | 38 | 3.10 | 6.96 | 1.32 | *MLE | 18.2 | 8.51 | |
| | 02/04/05 | 10:50 | 11:00 | SP | 10 | 48 | 3.91 | 6.94 | 1.32 | *MLE | 17.8 | 8.55 | |
| | 02/04/05 | 11:00 | 11:10 | SP | 10 | 58 | 4.72 | 6.89 | 1.28 | *MLE | 17.8 | 7.96 | |
| | 02/04/05 | 11:10 | 11:15 | SP | 5 | 63 | 5.13 | 6.83 | 1.25 | 880 | 18.3 | 6.86 | |
| | 02/04/05 | 11:15 | 11:20 | SP | 5 | 68 | 5.54 | 6.79 | 1.25 | 790 | 18.7 | 7.83 | |
| | 02/04/05 | 11:20 | 11:25 | SP | 5 | 73 | 5.95 | n.a. | n.a. | n.a. | n.a. | n.a. | Went dry |
| 501 | | | | | | | | | | | | | |
| Project ID: 01203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | | | |
| ate: 4 | | | | | | | | | | | | | |
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| Report Form: WELL DEVELOPMENT 2 | | | | | | | | | | | | | |
| Repor | | | | | | | | | | | | | |

| S | S C : | S E N | IGII | NEEF | RS | | 20 | PURGE 005 - 1st Qu | _ | RD | | WELL NUMBER MW- 1 |
|--|---|------------------------|------------------------|---------------------------|-------------------|-------------------|--|--|--------------------------|---------------------------|------------------------------|---|
| PROJ | JECT | Ghilo | tti Constri | uction Cor | npany | | JOB NUMBER 01203 | 312.00 | SITE 246 (| Ghilotti Av | | RECORDED BY Amy Yardley |
| SUI BAI | ND PUN BMERS ILER HER | | PUR MET | GING 'HOD | SAMPLIN METHOL | | PURGING CF for 2" dia (±10%), o REMARKS * Oil/wate | etteria Mi . wells), unt or until dry. | nimum of 3 til water pa | wetted cas rameters (j | ing volume pH, temp., o | s (or 5 gallons m inimum cond.) have stabilized Well as builts were |
| DE \ | ASING I EPTH T WATEF | O: | (D _c): 2.0 | <u> </u> | D _c | GROUND (FM) | WEATHE TAGGED | WATER LEV | | | | 2/11/2005 Sunny 4.89 / 4.9 |
| NA SC E | APL THE CREEN TOP: BOTTO DTAL D | DEPTH: DM: EPTH (TDc | 9.0 19. | -0.94 .* | h — — — | H TD _C | PURGE V DEPTH T TIME OF | WELL DEPT OLUME (3 C. O WATER FO SAMPLING: O WATER A ANCE OF SAI | ASING VOLU OR 80% REC | JMES): | 7.53 f | 17.86 4 gallons ft. below TOC 15:15 ft. below TOC Clear |
| ON | IE CASII | NG VOLUME: | : | 2.15 gallor | ns | | LABORAT | | ODY FORM I | FOR ANALY | Analy | tical Sciences RMATION. |
| DA | ATE - | PURGIN | | WATER REMOVED (GAL) | | CASING VOLUMES | рН | CONDUC- TIVITY (mmhos/cm) | CHARACTE TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | COMMENTS |
| 2/1 | 1/05 | 13:36 | 13:37 | 1 | 1 | 0.47 | 7.26 | 0.731 | 10 | 18.5 | 0.52 | |
| 2/1 | 1/05 | 13:37 | 13:39 | 2 | 3 | 1.40 | 7.13 | 0.739 | 10 | 18.2 | 0.47 | |
| 2/1 | 1/05 | 13:39 | 13:41 | 2 | 5 | 2.33 | 7.04 | 0.744 | 10 | 18.2 | 0.32 | |
| 2/1 | 1/05 | 13:41 | 13:44 | 2 | 7 | 3.26 | 6.98 | 0.741 | 10 | 18.4 | 0.23 | |
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| 2.00.6 | | | | | | | | | | | | |
| Report Form: WELL PURGE RECURD 2 Project ID: 01203312.00.GrZ Date: 4/19/2003 | | | | | | | | | | | | |
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| | CS EN | 1 G I I | NEEF | R S | | 20 | PURGE 005 - 1st Qu | ıarter | RD | | WELL NUMBER MW- 2 |
|--|---|-------------------|---------------------------|--------------------|-----------------|--|--|-----------------------------|---------------------------|------------------------------|--|
| PROJECT | | tti Constri | uction Cor | npany | | JOB NUMBER 01203 | R 3312.00 | SITE 246 (| Ghilotti Av | | RECORDED BY Amy Yardley |
| HAND SUBME BAILEF OTHEF | PUMP ERSIBLE PUMP R | PUR MET | GING 'HOD | SAMPLING METHOE | | PURGING CF for 2" dia (±10%), o REMARKS * Oil/wate | RITERIA Mi n. wells), unt or until dry. | inimum of 3 til water pa | wetted cas rameters (j | sing volume pH, temp., o | s (or 5 gallons minimum cond.) have stabilized Well as builts were |
| DEPT WA NAF NAPL | NG DIAMETER TH TO: TER (h): PL: THICKNESS: | 5.2 n.a n.a | 1 <u>*</u> -0.60 | → D _C | GROUND (FM) | TAGGED TAGGED PURGE V | SAMPLING: R: WATER LEV WELL DEPT OLUME (3 C. | TH FROM TO ASING VOLU | C: | 5. | 2/11/2005 Sunny .21 / 5.21 16.45 5 gallons ft. below TOC |
| TOTA Diamete | P: TTOM: LL DEPTH (TD _c ers in (inches) : D CASING VOLUME H] [3.14 (D _c / 2) ²] | epths in (feet) | 0 - | | TD _C | TIME OF DEPTH TO APPEARAL LABORAT | SAMPLING: O WATER A ANCE OF SAI | T TIME OF S MPLE: | AMPLING: | 6.02 t Analy | 15:30 ft. below TOC Clear tical Sciences |
| DATE | TI | ME FINISH | WATER REMOVED (GAL) | | CASING VOLUMES | рН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | COMMENTS |
| 2/11/0 | 5 13:58 | 13:59 | 1 | 1 | 0.55 | 7.09 | 0.696 | 10 | 16.7 | 0.88 | |
| 2/11/0 | 5 13:59 | 14:01 | 2 | 3 | 1.64 | 7.03 | 0.755 | 10 | 16.7 | 0.32 | |
| 203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | |
| Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | |
| Report Form: WELL PC | | | | | | | | | | | |

| | S C | S E N | I G I N | NEEF | RS | | 20 | PURGE 005 - 1st Qu | _ | RD | | WELL NUMBER MW- 3 |
|--|--|--|------------------------|---------------------------|--------------------|-----------------|--------------------------------|---|-------------------|--------------------------|------------------------------|---|
| Î | PROJECT | Ghilot | tti Constri | action Con | npany | | JOB NUMBER 01203 | R 312.00 | SITE 246 (| Ghilotti Av | | RECORDED BY Amy Yardley |
| | HAND PUN SUBMERS BAILER OTHER | | PUR MET | GING HOD | SAMPLING METHOE | | (±10%), 0 REMARKS * Oil/wate | . wells), unt or until dry. | til water pa | rameters (j | pH, temp., o | s (or 5 gallons m inimum cond.) have stabilized Well as builts were |
| | CASING DEPTH T | | (D _c): 2.0 | | → D _c | GROUND (FM) | WEATHE | | | | | 2/11/2005 Sunny |
| | NAPL: NAPL TH SCREEN | ICKNESS: | n.a n.a | ·* -0.39 ·* | h | H | TAGGED PURGE V | WATER LEV WELL DEPT OLUME (3 C. O WATER FO | TH FROM TO | C: | 6. | .86 / 4.86 18.12 7 gallons ft. below TOC |
| | Diameters in | EPTH (TD _C n (inches) : De | epths in (feet) | 0 - | ¥ | SCREEN INTERVAL | DEPTH T | SAMPLING: O WATER AT ANCE OF SAI FORY: | | AMPLIN <u>G:</u> | | 12:00 ft. below TOC Clear tical Sciences |
| | [TD _c - H] [3 | 5.14 (D _c / 2) ²] | | 2.24 gallor | | JLATIVE | SEE CHA | IN OF CUSTO | | | TICAL INFOR | İ |
| | DATE | PURGIN | | WATER REMOVED (GAL) | TOTAL F | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | COMMENTS |
| ı | 2/11/05 | 11:07 | 11:08 | 1 | 1 | 0.45 | 7.43 | 0.663 | 10 | 16.9 | 0.90 | |
| İ | 2/11/05 | 11:08 | 11:10 | 2 | 3 | 1.34 | 7.29 | 0.602 | 10 | 16.8 | 0.36 | |
| | 2/11/05 | 11:10 | 11:13 | 2 | 5 | 2.23 | 7.23 | 0.651 | 10 | 17.1 | 0.52 | |
| | 2/11/05 | 11:13 | 11:15 | 2 | 7 | 3.12 | 7.22 | 0.667 | 10 | 17.5 | 0.28 | |
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| 12.00. | | | | | | | | | | | | |
| Report Form: WELL PURGE RECORD 2 Project ID: 01203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | | |
| ject II | | | | | | | | | | | | |
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| Repor | | | | | | | | | | | | |

| | SEN | I G I 1 | NEEF | R S | | 20 | PURGE 005 - 1st Qu | ıarter | RD | | WELL NUMBER MW-04 | |
|-----------------|--|-----------------------|---------------------------|--|-----------------------|-------------------------|---------------------------------|--------------------|--------------------------|------------------------------|---|--|
| PROJECT | Chilo | 44: Camatum | ration Con | | | JOB NUMBE | R 3 312.00 | SITE | Ghilotti Av | | RECORDED BY | |
| | Gniio | | action Con | | | | | | | | Amy Yardley | |
| HAND PU | MP SIBLE PUMP | MET | GING 'HOD | SAMPLIN METHOL | | for 2" dia (±10%), o | n. wells), unt or until dry. | til water pa | rameters (| pH, temp., | es (or 5 gallons m inimun cond.) have stabilized | |
| BAILER OTHER | | | | X | | * Oil/wat Exceeded | er interface (<999 ntu' | probe used s). | to check f | for NAPLs. | MLE = Meter Limit | |
| CASING | DIAMETER | (D _c):2.0 |) | - ID | l | DATE OF | SAMPLING: | | | 2/11/2005 | | |
| DEPTH | го: | | Т | \rightarrow D _C | GROUND SURFACE (S) | WEATHE | R: | | | | Sunny | |
| WATE | R (h): | 3.8 | <u> 7</u> | | SURFACE | TAGGED | WATER LEV | ELS FROM | TOC: | 3 | 3.86 / 3.87 | |
| NAPL: | | n.a | ·* -0.44 | h | | TAGGED | WELL DEPT | H FROM TO | C: | | 19.71 | |
| NAPL TH | IICKNESS: | n.a | .* | | H | PURGE V | OLUME (3 C | ASING VOLU | JMES): | 7. | .7 gallons | |
| | I DEPTH: | | | | | DEPTH T | O WATER FO | OR 80% REC | HARGE: | 7.03 | ft. below TOC | |
| TOP: | | 5.1 | <u> </u> | _ | TD_{c} | TIME OF | SAMPLING: | | | | 14:20 | |
| BOTT | CM: | 20. | 1 | <u> </u> | : -▼ | | O WATER A | T TIME OF S | AMPLING: | 4 16 | ft. below TOC | |
| TOTAL D | DEPTH (TD _C | ;):20.1 | 10 | <u> </u> | SCREEN | | ANCE OF SAI | | 7 UVII EII <u>10.</u> | 4.10 | Cloudy | |
| Diameters i | n (inches) : De | epths in (feet) | | =- | INTERVAL | | | VIF LL. | | A lv | | |
| | ING VOLUME 3.14 (D _c / 2) ²] | | 2.58 gallor | ns | | SEE CHA | IN OF CUST | ODY FORM I | OR ANALY | • | tical Sciences RMATION. | |
| | PURGIN | IG DATA | | | JLATIVE REMOVED | | WATER | CHARACTE | ERISTICS | | COMMENTS | |
| DATE | BEGIN | ME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | | |
| 2/11/05 | 12:20 | 12:22 | 2 | 2 | 0.78 | 7.24 | 1.140 | *MLE | 19.6 | 0.35 | | |
| 2/11/05 | 12:22 | 12:24 | 2 | 4 | 1.55 | 7.12 | 0.844 | *MLE | 19.8 | 0.43 | | |
| 2/11/05 | 12:24 | 12:27 | 2 | 6 | 2.33 | 7.05 | 0.823 | *MLE | 19.8 | 0.40 | | |
| 2/11/05 | 12:27 | 12:29 | 2 | 8 | 3.10 | 7.02 | 0.823 | *MLE | 19.9 | 0.28 | | |
| 2/11/03 | 12.27 | 12.2 | _ | | 0.10 | 7.02 | 0.020 | IVIEE | 15.5 | 0.20 | | |
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| | S E N | G 1 | NEEF | R S | | 20 | PURGE 005 - 1st Qu | arter | RD | | WELL NUMBER MW-05 |
|--------------------|--|-----------------------|---------------------------|-----------------------|--------------------|-------------------------|---------------------------------|--------------------|--------------------------|------------------------------|---|
| PROJECT | Chile | tti Canstur | vation Con | mnany | | JOB NUMBE | R 3 312.00 | SITE | Ghilotti Av | | RECORDED BY |
| | Gillo | | action Con | | | | | | | | Amy Yardley |
| HAND PU SUBMERS | MP SIBLE PUMP | MET | GING HOD K | SAMPLIN METHOL | | for 2" dia (±10%), o | n. wells), unt or until dry. | il water pa | rameters (| pH, temp., | es (or 5 gallons m inimun cond.) have stabilized |
| BAILER OTHER | | | | X | _ | * Oil/wat Exceeded | er interface l (<999 ntu's | s). | to check i | or NAPLs. | MLE = Meter Limit |
| CASING | DIAMETER | (D _c):2.0 |) | - ID | _ | DATE OF | SAMPLING: | | | 2 | 2/11/2005 |
| DEPTH ⁻ | го: | | 1 | \rightarrow D_{C} | GROUND (S) | WEATHE | :R: | | | | Sunny |
| WATE | R (h): | 5.5 | 2 * | 下 | | TAGGED | WATER LEV | ELS FROM | TOC: | 5 | 5.52 / 5.52 |
| NAPL: | | n.a | -0.60 | h | | TAGGED | WELL DEPT | H FROM TO | C: | | 19.76 |
| NAPL TH | IICKNESS: | n.a | <u>*</u> | h h | H | PURGE V | OLUME (3 C | ASING VOLU | JMES): | 6 | .9 gallons |
| | I DEPTH: | - | | | | DEPTH T | O WATER FO | OR 80% REC | CHARGE: | 8.34 | ft. below TOC |
| TOP: | | 5.2 | | <u> </u> | TD_{c} | TIME OF | SAMPLING: | | | | 14:20 |
| BOTT | | 20. | | | - | DEPTH T | O WATER A | T TIME OF S | AMPLING: | 6.13 | ft. below TOC |
| | DEPTH (TD _c | · — | 20 | 1 | SCREEN INTERVAL | APPEARA | ANCE OF SAI | MPLE: | | | Cloudy |
| | n (inches) : De | | | - | : ₩ | LABORA ⁻ | TORY: | | | Analy | tical Sciences |
| | ING VOLUME 3.14 (D _c / 2) ²] | | 2.30 gallor | ns | • | SEE CHA | IN OF CUST | ODY FORM I | OR ANALY | TICAL INFO | RMATION. |
| | PURGIN | G DATA | | | ILATIVE REMOVED | | WATER | CHARACTE | ERISTICS | | COMMENTS |
| DATE | TIN | ME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | рН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 2/11/05 | 12:37 | 12:38 | 1 | 1 | 0.44 | 7.06 | 0.468 | *MLE | 18.1 | 0.42 | |
| 2/11/05 | 12:38 | 12:40 | 2 | 3 | 1.31 | 6.94 | 0.480 | *MLE | 17.8 | 0.33 | |
| 2/11/05 | 12:40 | 12:42 | 2 | 5 | 2.18 | 6.90 | 0.479 | *MLE | 17.7 | 0.34 | |
| 2/11/05 | 12:42 | 12:44 | 2 | 7 | 3.05 | 6.85 | 0.481 | *MLE | 17.7 | 0.25 | |
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| | S C | SEN | I G I I | NEEF | RS | | | PURGE 005 - 1st Qu | WELL NUMBER MW-06 | | | |
|---|------------------------------|--|-----------------|---------------------------|--------------------|-------------------|--------------------------------|---------------------------------|--------------------|--------------------------|---------------------|--|
| ŀ | PROJECT | | | | | | JOB NUMBER | | SITE | | | RECORDED BY |
| | | Ghilo | tti Constru | uction Con | npany | | 01203 | 312.00 | 246 (| Ghilotti Av | enue | Amy Yardley |
| | HAND PUMP SUBMERSIBLE PUMP X | | | | | | (±10%), 0 REMARKS * Oil/wate | . wells), unt or until dry. | til water pa | rameters (_] | pH, temp., c | s (or 5 gallons minimum cond.) have stabilized MLE = Meter Limit |
| | OTHER EX | | | | | | | (S))) Iitu i | 3). | | | |
| | → D _c ← | | | | | | | SAMPLING: | 2 | 2/11/2005 Sunny | | |
| | WATER | | 6.2 | 3 🔻 | <u> </u> | GROUND (S) | WEATHE | WATER LEV | /ELS EROM | TOC: | 6 | .21 / 6.23 |
| | NAPL: | | n.a | * -0.41 | | | | WELL DEPT | | | 0 | 20.06 |
| | NAPL TH | ICKNESS: | n.a | | | | | OLUME (3 C | | | 6 | 7 gallons |
| | SCREEN | DEPTH: | | | h j | H | | OLUME (3 C. O WATER FO | | · · | | t. below TOC |
| | TOP: | | 5.3 | 3 | [] | TD _C | | SAMPLING: | OR 60% REC | HARGE. | 0.901 | 14:50 |
| | вотто | DM: | 20. | 3 | <u>▼ ▼ </u> | _♥ | | | T TIME OF S | AMDLING: | 6 45 6 | - |
| | TOTAL D | EPTH (TD _c | ;):20.3 | 30 | | SCREEN | | O WATER A | | AMPLING: | | t. below TOC |
| | Diameters in | (inches) : De | epths in (feet) | | | INTERVAL | | ANCE OF SAI | VIPLE. | | | ery cloudy |
| | | NG VOLUME .14 (D _c / 2) ²] | | 2.23 gallor | ns | .] ——▼ | SEE CHA | | TICAL INFOR | rmation. | | |
| ľ | | PURGIN | IG DATA | | | LATIVE REMOVED | | WATER | COMMENTS | | | |
| | DATE | | ME | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN | |
| ŀ | | BEGIN | FINISH | ` ' | | | | , | , , | . , | (ppm) | |
| - | 2/11/05 | 12:58 | 12:59 | 1 | 1 | 0.45 | 6.94 | 0.648 | *MLE | 18.3 | 0.73 | |
| | 2/11/05 | 12:59 | 13:02 | 2 | 5 | 1.35 | 6.85 | 0.617 | *MLE | 17.9 | 0.35 | |
| - | 2/11/05 | 13:02 | 13:04 | 2 | | 2.24 | 6.81 | 0.584 | *MLE | 17.8 | 0.38 | |
| - | 2/11/05 | 13:04 | 13:06 | 2 | 7 | 3.14 | 6.78 | 0.569 | 713 | 17.9 | 0.36 | |
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| Project ID: 01203312.00.GPJ Date: 4/19/2005 | | | | | | | | | | | | |
| Proje | | | | | | | | | | | | |
| $3D_2$ | | | | | | | | | | | | |
| Report Form: WELL PURGE RECORD 2 | | | | | | | | | | | | |
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| Re_{l} | | | | | | | | | | | | |

| 3C3 ENGINEERS | | | | | | | PURGE 005 - 1st Qu | | WELL NUMBER MW-07 | | | |
|--|---|----------------------|---------------------------|-----------------------|-----------------------|---|---|--------------------|--------------------------|------------------------------|--------------------------|--|
| PROJECT Ghilotti Construction Company | | | | | | JOB NUMBER SITE 01203312.00 246 Ghilotti Avenue | | | | | RECORDED BY Amy Yardley | |
| | - Gillio | | | | C | | | | | | · | |
| | HAND PUMP SUBMERSIBLE PUMP BAILER X | | | | | | PURGING CRITERIA Minimum of 3 wetted casing volumes (or 5 gallons minim for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry. REMARKS * Oil/water interface probe used to check for NAPLs. MLE = Meter Limit Exceeded (<999 ntu's). | | | | | |
| | DIAMETER | (D.): 2 (| <u> </u> | | | DATE OF | SAMPLING: | | | | 2/11/2005 | |
| | DIAMETER | (D _C): | | \rightarrow D_{C} | - | | | | | 2 | | |
| DEPTH 1 WATE | | 5.5 | 7 🔻 | | GROUND SURFACE (S) | WEATHE | | /EL 0 EB 014 | | | Sunny | |
| NAPL: | (/ . | n.a | * | ▼ □ | | | WATER LEV | | | 5 | .59 / 5.57 | |
| | ICKNESS: | n.a | -0.38 | | | | WELL DEPT | | | | 20.35 | |
| SCREEN | | | | h | Н | PURGE V | OLUME (3 C | ASING VOLU | JMES): | 7. | 1 gallons | |
| TOP: | DEPTH: | 5.4 | 1 | | TD_{c} | DEPTH T | O WATER FO | OR 80% REC | CHARGE: | 8.46 f | ft. below TOC | |
| ВОТТО | JW. | 20. | | <u> </u> <u> </u> | <u> </u> | TIME OF | SAMPLING: | | | | 15:05 | |
| |)EPTH (TD _o | | | <u> </u> | | DEPTH T | O WATER A | T TIME OF S | AMPLIN <u>G:</u> | 5.68 f | ft. below TOC | |
| | | | +0 | [== | SCREEN INTERVAL | APPEARA | ANCE OF SAI | MPLE: | | | Cloudy | |
| | n (inches) : De | , | | | | LABORA ⁻ | TORY: | | | Analy | tical Sciences | |
| [TD _c - H] [3 | NG VOLUME 3.14 (D _C / 2) ²] | : [7.48 gal/ft³]: | 2.36 gallor | ns | | SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INF | | | | | RMATION. | |
| | | | | | JLATIVE REMOVED | | WATER | CHARACTE | RISTICS | COMMENTS | | |
| DATE | TIN | ME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | | |
| 2/11/05 | 13:18 | 13:19 | 1 | 1 | 0.42 | 7.13 | 0.964 | *MLE | 18.8 | 0.74 | | |
| 2/11/05 | 13:19 | 13:21 | 2 | 3 | 1.27 | 7.13 | 1.260 | *MLE | 19.1 | 0.32 | | |
| 2/11/05 | 13:21 | 13:23 | 2 | 5 | 2.12 | 7.10 | 1.230 | 620 | 19.3 | 0.32 | | |
| 2/11/05 | 13:23 | 13:25 | 2 | 7 | 2.12 | 7.10 | 1.210 | 363 | 19.5 | 0.23 | | |
| 2/11/05 | 13:23 | 13:25 | 2 | / | 2.97 | 7.07 | 1.210 | 363 | 19.5 | 0.17 | | |
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| | SEN | IGI1 | NEEF | RS | | 20 | PURGE 005 - 1st Qu | _ | RD | | WELL NUMBER MW-08 |
|---|---|-----------------|---------------------------|-------------------|--------------------|-------------------------|----------------------------------|--------------------|--------------------------|------------------------------|--------------------------|
| PROJECT Ghilotti Construction Company | | | | | | JOB NUMBE. | R 3 312.00 | enue | RECORDED BY Amy Yardley | | |
| | Gillio | | | | _ | | | | | | es (or 5 gallons minimum |
| HAND PUI | MP | | GING THOD | SAMPLIN METHOL | | for 2" dia (±10%), o | n. wells), unto or until dry. | til water pa | rameters (| pH, temp., | cond.) have stabilized |
| SUBMERS | SIBLE PUMP | | X . | | | * Oil/wet | ou intouface | nucho usod | l to aboals t | For NADI a | MLE = Meter Limit |
| BAILER OTHER | | | | X | | Exceeded | er interface (<999 ntu' | s). | i to check i | or NAFLS. | WILE - Meter Limit |
| CASING DIAMETER (D _c): 2.0 → D _c ← | | | | | | | SAMPLING: | 2 | 2/11/2005 | | |
| DEPTH 1 | | | . • | | GROUND (S) | WEATHE | :R: | | | | Sunny |
| WATE | | 3.8 | | ▼ 🖺 | | TAGGED | WATER LEV | ELS FROM | TOC: | 3 | 5.88 / 3.89 |
| NAPL: | | n.a | -0.29 | h | | TAGGED | WELL DEPT | H FROM TO | C: | | 20.26 |
| | IICKNESS: | n.a | <u>*</u> | h } | H | PURGE V | OLUME (3 C | ASING VOLU | JMES): | 7. | 9 gallons |
| SCREEN | DEPTH: | - | | | | DEPTH T | O WATER F | OR 80% REC | CHARGE: | 7.11 | ft. below TOC |
| TOP: | | 5.3 | | <u> </u> | TD_{c} | TIME OF | SAMPLING: | | | | 12:10 |
| ВОТТО | | 20. | | <u> </u> | — | DEPTH T | O WATER A | T TIME OF S | AMPLING: | 4.02 | ft. below TOC |
| TOTAL D | EPTH (TD _c | 20.3 | 30 | == | SCREEN INTERVAL | APPEARA | ANCE OF SAI | MPLE: | | V | ery cloudy |
| Diameters in | n (inches) : De | epths in (feet) | | | | LABORA ⁻ | TORY: | | | | tical Sciences |
| | NG VOLUME 3.14 (D _C / 2) ²] | | 2.63 gallor | ns : | | | IN OF CUST | | | | |
| | PURGING DATA CUMULATI | | | | | | WATER | CHARACTE | RISTICS | S COMMEN | |
| DATE | TIN | ME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 2/11/05 | 11:42 | 11:44 | 2 | 2 | 0.76 | 7.29 | 1.230 | *MLE | 17.2 | 0.24 | |
| | | | 2 | 4 | | | | | | | |
| 2/11/05 | 11:44 | 11:46 | _ | - | 1.52 | 7.24 | 1.260 | 815 | 16.7 | 0.38 | |
| 2/11/05 | 11:46 | 11:48 | 2 | 6 | 2.28 | 7.24 | 1.260 | 524 | 16.8 | 0.37 | |
| 2/11/05 | 11:48 | 11:51 | 2 | 8 | 3.04 | 7.18 | 1.260 | 268 | 16.9 | 0.14 | |
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| | S E N | 1 G I 1 | NEEF | RS | | 20 | PURGE 005 - 1st Qu | _ | RD | | WELL NUMBER MW-09 |
|--|--|------------------------|---------------------------|------------------------------|--------------------|---------------------|---------------------------------|--------------------|--------------------------|------------------------------|--------------------------|
| PROJECT Ghilotti Construction Company | | | | | | JOB NUMBE. | R 3 312.00 | | RECORDED BY Amy Yardley | | |
| | Gillo | | | | | | | | Ghilotti Av | | es (or 5 gallons minimur |
| HAND PU | MP | | GING PHOD | SAMPLIN METHOL | | for 2" dia | n. wells), unt or until dry. | til water pa | rameters (| pH, temp., | cond.) have stabilized |
| SUBMERS BAILER OTHER | SUBMERSIBLE PUMP X BAILER X | | | | | | er interface l (<999 ntu' | probe used s). | l to check f | or NAPLs. | MLE = Meter Limit |
| CASING | DIAMETER | (D _c): 2.0 |) | | | DATE OF | SAMPLING: | | | 2 | 2/11/2005 |
| DEPTH | | | | \rightarrow D _C | GROUND (S) | WEATHE | :R: | | | | Sunny |
| WATE | R (h): | 4.0 | <u> </u> | <u>- ₽</u> | SURFACE | TAGGED | WATER LEV | ELS FROM | TOC: | 4 | .03 / 4.02 |
| NAPL: | | n.a | * -0.25 | h | | TAGGED | WELL DEPT | H FROM TO | C: | | 20.35 |
| NAPL TH | IICKNESS: | n.a | .* | h | H | PURGE V | OLUME (3 C | ASING VOLU | JMES): | 7. | .8 gallons |
| | I DEPTH: | | | | | DEPTH T | O WATER FO | OR 80% REC | HARGE: | 7.23 | ft. below TOC |
| TOP: | | 5.3 | | <u> </u> | TD_{c} | TIME OF | SAMPLING: | | | | 12:05 |
| BOTTO | OM: | 20. | 3 | <u> </u> | : | DEPTH T | O WATER A | T TIME OF S | AMPLING: | 4.91 | ft. below TOC |
| TOTAL D | DEPTH (TD _o | 20.3 | 30 | | SCREEN INTERVAL | APPEARA | ANCE OF SAI | MPLE: | | V | ery cloudy |
| Diameters i | n (inches) : De | epths in (feet) | | | | LABORA ⁻ | TORY: | | | | tical Sciences |
| | ONE CASING VOLUME: [TD _C - H] [3.14 (D _C / 2) ²] [7.48 gal/ft ³]: 2.62 gallons | | | | | SEE CHA | IN OF CUST | RMATION. | | | |
| | PURGING DATA CUMULATIVE TOTAL REMOVED | | | | | | WATER | COMMENTS | | | |
| DATE | TIN | ME FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | pН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | |
| 2/11/05 | 11:23 | 11:25 | 2 | 2 | 0.76 | 7.34 | 0.629 | 723 | 16.8 | 0.34 | |
| 2/11/05 | 11:25 | 11:27 | 2 | 4 | 1.53 | 7.16 | 0.650 | 770 | 16.5 | 0.27 | |
| 2/11/05 | 11:27 | 11:29 | 2 | 6 | 2.29 | 7.09 | 0.682 | *MLE | 16.4 | 0.32 | |
| 2/11/05 | 11:29 | 11:31 | 2 | 8 | 3.06 | 7.08 | 0.687 | *MLE | 16.5 | 0.44 | |
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| | S E N | I G I 1 | NEEF | R S | | 20 | PURGE 005 - 1st Qu | _ | RD | | WELL NUMBER MW-10 | |
|--|--|-----------------------|---------------------------|---|-----------------------|-----------|---|--------------------|--------------------------|------------------------------|--------------------|--|
| PROJECT Ghilotti Construction Company | | | | | | JOB NUMBE | R 3 312.00 | | RECORDED BY | | | |
| | Gillo | tu Constr | iction Con | прапу | | | | | Ghilotti Av | | Amy Yardley | |
| SUBMERS | METHOD METHOD HAND PUMP SUBMERSIBLE PUMP Y | | | | | | PURGING CRITERIA Minimum of 3 wetted casing volumes (or 5 gallons minimu for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized (±10%), or until dry. REMARKS * Oil/water interface probe used to check for NAPLs. MLE = Meter Limit | | | | | |
| BAILER OTHER | | | | X | | Exceeded | l (<999 ntu's | s). | | | | |
| CASING | DIAMETER | (D _c):2.0 |) | → D _c | - | DATE OF | SAMPLING: | | | 2 | 2/11/2005 | |
| DEPTH 1 | го: | | 1 | D _C | GROUND SURFACE (S) | WEATHE | R: | | | | Sunny | |
| WATE | R (h): | 3.7 | 3 🕌 | | | TAGGED | WATER LEV | ELS FROM | TOC: | 3 | 5.71 / 3.73 | |
| NAPL: | | n.a | ·* -0.51 | h | | TAGGED | WELL DEPT | H FROM TO | C: | | 20.3 | |
| NAPL TH | IICKNESS: | n.a | .* | | H | PURGE V | OLUME (3 C. | ASING VOLU | JMES): | 8. | .0 gallons | |
| SCREEN | DEPTH: | | | 11 | | | O WATER FO | | | | ft. below TOC | |
| TOP: | | 5.5 | 5 | | TD _c | | SAMPLING: | | | | 11:55 | |
| вотто | OM: | 20. | 5 | <u>* </u> | . —♥ | | | | AMPLING: | 2.76 | - | |
| TOTAL D | EPTH (TD ₀ | ;): 20.5 | 50 | - | SCREEN | | O WATER A | | AMPLING. | 3.70 | ft. below TOC | |
| Diameters i | n (inches) : De | epths in (feet) | | | INTERVAL | | ANCE OF SAI | MPLE: | | | Cloudy | |
| ONE CASI | NG VOLUME | : | | | ! ───₩ | LABORA | TORY: | | - | Analytical Sciences | | |
| | ONE CASING VOLUME: [TD _c - H] [3.14 (D _c / 2) ²] [7.48 gal/ft ²]: 2.65 gallons | | | | | SEE CHA | IN OF CUSTO | TICAL INFO | RMATION. | | | |
| | PURGIN | IG DATA | I | | JLATIVE REMOVED | | WATER | CHARACTE | RISTICS | | COMMENTS | |
| DATE | BEGIN | FINISH | WATER REMOVED (GAL) | GAL | CASING VOLUMES | рН | CONDUC- TIVITY (mmhos/cm) | TURBIDITY (NTU) | TEMPER- ATURE (°C) | DISSOLVED OXYGEN (ppm) | | |
| 2/11/05 | 10:45 | 10:47 | 2 | 2 | 0.75 | 7.60 | 1.140 | 396 | 17.1 | 0.93 | | |
| 2/11/05 | 10:47 | 10:49 | 2 | 4 | 1.51 | 7.47 | 0.868 | 464 | 17.0 | 0.62 | | |
| 2/11/05 | 10:49 | 10:51 | 2 | 6 | 2.26 | 7.39 | 0.874 | *MLE | 17.2 | 0.22 | | |
| 2/11/05 | 10:51 | 10:53 | 2 | 8 | 3.01 | 7.37 | 0.859 | *MLE | 17.5 | 0.30 | | |
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APPENDIX D

WELL SURVEY REPORT

JACOBS LAND SURVEYING 1625 PERSEUS CT. PETALUMA, CA. 94954 (707) 782-0733

DATE: 03-10-05

Job # 05-1033-S

TO: SCS Engineers

3645 Westwind Blvd.

Santa Rosa, California 95403

RE: Ghilotti Construction 246 Ghilotti Ave.

Santa Rosal, Ca.

Your Job No. 3312.00

On 03-09-05 this office ran a closed level loop with a Zeiss Ni2 Auto Level from City of Santa Rosa Benchmark, D-230, a PK nail in the curb at the northerly end of a catch basin at the Northwest corner of Todd Rd. and Standish Ave., elevation 99.021, NGVD 1929 datum, yielding the following well elevations.

| MW# | Rim | Top Casing | Comments | | |
|--------------|-----------------------------|-----------------------|-----------------------|--|--|
| | | | | | |
| MW-4 | 98.75 | 98.31 | (A) (N) | | |
| MW-5 | 100.80 | 100.20 | (SL) (N) | | |
| MW-6 | 101.36 | 100.95 | (SL) (N) | | |
| MW-7 | 100.55 | 100.17 | (A) (N) notched | | |
| MW-8 | 98.66 | 98.37 | (SL) (N) (P) | | |
| MW- 9 | 98.71 | 98.46 | (SL) (N) (P) | | |
| MW-10 | 98.55 | 98.04 | (SL) (N) | | |
| | | | | | |
| KEY | (A) = Allen head bolt | (SL) = Slot $(S) = S$ | mall bolt | | |
| | (N)(E)(S)(W) = Direction | (B) = Black mark | (BN)=Black mark/notch | | |
| | (M) = Missing/stripped bolt | (OC) = Outer casing | () | | |
| | (P)= Pressure | (OG) = Original grade | | | |

Temporary Benchmark: Set spike in power pole opposite northerly Ghilotti gate, elevation 99.73.

REMARKS:

All wells recovered and observed were in good condition and were resealed as found.

Steven H. Jacobs PLS 5296 I